3 1761 05426621 8

Digitized by the Internet Archive
in 2025 with funding from
University of Toronto

https://archive.org/details/31761054266218

The Canadian Dental Hygienists Association

PROBE JOURNAL

de l'Association canadienne des hygiénistes dentaires

January/February 2000 vol. 34 no. 1

Infant Tooth Decay Program for First Nations

l Health Survey Report

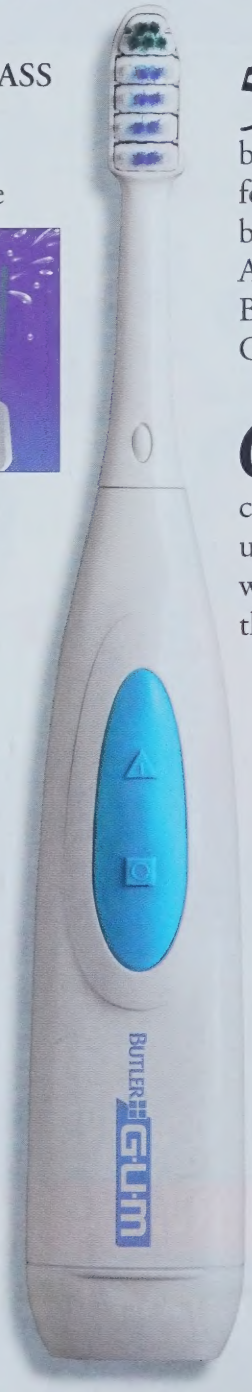
r Victoria Included

DENTAL LIBRARY
UNIVERSITY OF TORONTO
124 EDWARD ST.
TORONTO M5G 1G6
ONTARIO, CANADA

PULSE®

POWER TOOTHBRUSH

WHAT MAKES IT SO UNIQUE?



1 PULSE SIMULATES THE DR. BASS TECHNIQUE TO ENSURE PERFECT BRUSHING RESULTS.
This unique pulsating action moves the bristles "up and down" at 6,000 strokes per minute. So no special technique is required to give your patients a clean they can feel.

2 IT'S CLINICALLY PROVEN TO BE HIGHLY EFFECTIVE.
Results show that Pulse is unsurpassed when compared to a leading power toothbrush in reducing gingival bleeding, interproximal plaque and stains.

3 IT'S LIGHT. IT'S PORTABLE.
Easy to take anywhere, anytime, anyplace. Pulse now comes with a travel case.

4 IT'S EXTREMELY AFFORDABLE.
Priced at about half the cost of some leading power toothbrushes in the market today, Pulse is highly affordable.

5 PULSE CLEANS THREE WAYS.
The three levels of bristles help dislodge food particles and plaque by gently cleaning:
A) Between the teeth
B) Hard to reach areas
C) And even below the gumline.

6 IT'S SAFE.
Pulse has no recharger or electric cord but is battery powered making it unsurpassed for safety. It is also completely water resistant, so it can be used safely in the shower.

7 IT'S GENTLE.
It safely cleans crowns, bridges, braces and all types of restorative dentistry with no damage. Also available in a NEW compact head size.

8 IT'S THE PERFECT SOLUTION.
It's the perfect gift for your patients with imperfect brushing habits, or ideal as a recommendation to your patients needing improved compliance.

BUTLER G·U·M®
EXPERTS IN ORAL CARE

For more information or to see a Butler Sales Representative, please call toll free:

1-800-265-8353

© 1998 John O. Butler Company

Are we Communicating With our Clients?

Lynda McKeown, RDH, HBA, MA

Lynda McKeown, RDH, HBA, MA

I was having lunch with friends the other day. Yvonne had come from an appointment with her dental hygienist whom she considers to be competent and well informed.

This dental hygienist has seen Yvonne every 6 months for the last 10 years, for maintenance scaling. Also, Yvonne likes to have her teeth polished because:

#1 she is a smoker and she wants the stain removed in order for her teeth to be white, and
#2 her teeth feel better when they are polished.

Yvonne has been an advocate for dental hygienists and dental hygiene services for quite some time. She has spoken on behalf of dental hygienists before government committees. We consider her to be a reasonably informed member of the public.

What she told Sue (a dental hygienist) and I surprised us, and brought our attention to the importance of words that we use with clients.

Yvonne has always "brushed" her teeth. In fact, she "brushes" them many times a day. She likes to have fresh breath and white teeth and she usually brushes after she has a cigarette. Recently, Yvonne had been so obsessed with white teeth that she had been brushing with a hard brush. Her gums were feeling sore. This initiated an open dialogue with her dental hygienist. She was genuinely surprised to find out at this particular dental hygiene appointment that she has been using her toothbrush incorrectly. She is beginning to get some abrasion, and she has some areas of gingivitis. She has been using the ends of the bristles across her teeth. Also, she has not been a regular 'flosser'.

Yvonne said, "I don't consider myself unusual. Most people brush their teeth to keep them clean, white, and hopefully free of bacteria. However, I think it is the dental hygienist's job to remove the bacteria."

This was an 'eye opener' for Sue and me — and Yvonne.

Dental hygienists try to convey the message, 'remove harmful bacteria from around teeth and gums.' We know that the research indicates the relationship between high levels of bacteria in the mouth with aspiration pneumonia, heart disease, and low birth weight babies. Also, bacteria left between the teeth and on the tongue result in bad breath.

Yvonne said, "**Why don't you tell the public that**? The public is familiar with the idea of removing bacteria from their clothes, bodies, kitchens, etc. to stay clean and healthy."

"I thought I was doing that," I replied, "but you have definitely given me a 'wake up' call."

"Make it clear," said Yvonne, "that it is the bacteria you want us to remove from around our gums and between our teeth to keep us healthier and to have fresh breath. If you say it like that, **maybe then we will listen**."

I showed her Dr. Roizen's book *Real Age*. He advocates daily removal of oral bacteria:

> "Gingivitis and periodontal disease cause aging and the immune system and arterial systems… By avoiding periodontal disease, you can make you Real Age 6.4 years younger. In contrast, people with acute periodontal disease are 3.4 years older than their chronological age. Why? Because the bacteria that cause periodontal disease appear to trigger an immune response that causes inflammation throughout the body. A side effect seems to be inflammation of the arteries, a major precursor to heart disease. Although the exact cause and effect are not well understood yet, people who floss may live longer."

At the end of lunch Yvonne thanked us, and with a twinkle in her eye said, "You should have given me this information 10 years ago."

Do your clients know the difference between brushing teeth to keep them white, or using their brush to remove harmful bacteria?

Blueprint for Financial Security

Merrill Lynch has a tradition of providing innovative services to help you build and manage your assets in ways no other financial services firm can match.

An example of this is **Merrill Lynch Financial BluePrints,** a comprehensive financial planning service that can provide you with answers to critical questions concerning your financial future, such as:

- **Will your retirement savings provide for the lifestyle you're planning?**
- **Should you be saving for your children's education?**
- **Are you paying too much in taxes, or could you be keeping more of what you earn?**
- **Will the government get a larger share of your estate than your loved ones?**

Merrill Lynch Financial BluePrints assesses your current financial situation allowing you and your Financial Consultant to implement smart strategies to give you greater comfort in meeting your current and future financial needs.

Let us help you design a strategy that is ideal for you. This service is available to you at no cost or obligation.

For more information and to arrange for your **complimentary Financial BluePrint** call: **1 800 563-6623** or e-mail: **cdha@ca.ml.com.**

Merrill Lynch

CDHA ACHD THE CANADIAN DENTAL HYGIENISTS ASSOCIATION L'ASSOCIATION CANADIENNE DES HYGIENISTES DENTAIRES

Merrill Lynch Canada Inc. Member - CIPF

CDHA00FBP

CONTENTS

Vol. 34 No. 1– 2000

3 **PRESIDENT'S MESSAGE**

Are We Communicating With Our Clients?
By Lynda McKeown, RDH, HBA, MA

NEWS

6 36th Annual Meeting of the CDHA Board of Directors

CDHA — Working for You!

7 Added Member Benefit — CDHIP Long Term Disability
CDHA Website Recognized by Healthlinks

CDHA Life Membership Recipient for 1999 — Fran Richardson

8 CDHA Distinguished Service Award Recipient for 1999 — Dale Scanlan

Member Recognition

9 Vancouver Endodontist, Dr. John Diggens, New President of the CDA

Dental Hygiene — Coast to Coast

10 Dental Education in Care of Persons with Disabilities

First Canadian Conference on Literacy and Health — May 28–30, 2000.

11 Aboriginal Health Collection: A Unique and Valuable Resource

BC Dental Hygiene Practice and Entrepreneurship Symposium

12 National Dental Hygiene Week™ ODHA Report — 1999 NDHW Activities

13 Call for Distinguished Service and Life Membership

FEATURE REPORTS

14 Developing and Providing an Infant Tooth Decay Program for a First Nations Community — CDHA/Colgate Community Health Grant (1998) Report
By Sherry Saunderson, RDH

25 The First Nations and Inuit Regional Health Survey National Report 1999
Reprinted with permission from the First Nations and Inuit Regional Health Survey

15 **11TH ANNUAL CDHA PROFESSIONAL CONFERENCE — 2000**

Partnerships in Health — Broadening Our Professional Horizons

30 **DENTAL ABSTRACTS**

33 **NEW PRODUCTS**

INFORMATION

35 Canada Hosts Global Conference on Ageing

36 Y2K Upcoming Events Calendar

37 Classifieds

38 Advertisers' Index

Probe Advertising Rates

Oral-B The Brand More Hygienists Use Themselves

MANAGER, COMMUNICATIONS SERVICES: Angela J. Whelan, B.A.
EXECUTIVE DIRECTOR: C. Matheson Worobey, Dip.D.H.
EDITORIAL ADVISOR: K. Edwards, M.A.
CONTRIBUTORS
Leanne Carlson-Mann, Dip.D.T., Dip.D.H.
Carol Barr Overholt, Dip.D.H., B.Ed.
Karen Wolf, Dip.D.H.
EDITORIAL BOARD
B. Fortune, Dip.D.H.
R. Lunn, Dip.D.H.
L. MacDonald, Dip.D.H., B.Sc.D., M.Ed.
J. Waites, Dip.D.H.
DESIGN: Edels-Marcotte
Published six times a year, Jan./Feb., Mar./Apr., May/June (Scientific Issue), July/Aug., Sept./Oct., Nov./Dec. (Scientific Issue), by The Canadian Dental Hygienists Association,
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Tel (613) 224–5515

Canada Post Publications Mail Registration No. 09877
CANADIAN POSTMASTER: Notice of change of address and undeliverables should be sent to:
Canadian Dental Hygienists Association
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Subscriptions $75.00 (GST Included) in Canada, $125.00 Cdn for US and $130.00 Cdn elsewhere. Fifty cents per issue is allocated from membership fees for journal production. All statements are those of the authors and do not necessarily represent the CDHA, its Board, or its staff.
ADVERTISING AND SUBSCRIPTIONS:
Keith Health Care Inc.
10 Front Street South
Mississauga, ON L5H 2C4
(905) 278–6700

CDHA 2000
6176 CN ISSN 0 834–1494
GST Registration No. R106845233

CDHA CENTRAL OFFICE STAFF
Executive Director: Carol Matheson Worobey
Manager, Communications Services: Angela J. Whelan
Manager, Finance and Administration: Monique Belleau Rock
Manager, Member Services: Sandra VanWart
Member Services Assistant: Louise Lalonde
Administrative Assistant: Shelly Minnie
Receptionist/Information Clerk: Francine Fortin
All CDHA members are invited to call the CDHA's Member Line toll-free, with their questions/inquiries:
1–800–267–5235, Fax (613) 224–7283
Internet: http://www.cdha.ca E-mail: info@cdha.ca
We look forward to serving you.

The Canadian Dental Hygienists Association's Journal, *Probe*, is the official publication of the CDHA. The CDHA invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to *Probe* do not necessarily represent the views of the CDHA, nor can the CDHA guarantee the authenticity of the reported research. Copyright 1999. All materials subject to this copyright may be photocopied for the non-commercial purpose of scientific or educational advancement.

36th Annual Meeting of the CDHA Board of Directors

1. New President, Lynda McKeown with Past-President, Donna Bowes

2. CDHA Board of Directors, Executive Director and facilitator Carolyn Everson

The Board of Directors of the Canadian Dental Hygienists Association met October 16th, 1999 for the Annual Meeting of the Board. Three days of intense discussion, careful planning and deliberation resulted in a strong strategic plan for the Association. The Board of Directors, with the guidance of facilitator Carolyn Everson was able to complete the move to a governance model that provides for the Board to be solely responsible for policy direction for the profession and transfer association operations to Central Office.

In addition, the Executive Council has been disbanded since the Board as a whole is responsible for policy direction. Three Officers, the President, President Elect and Past President remain on the Board but will as of 2000 be chosen from amongst the Board, reducing the size of the board over the next three years.

The CDHA vision, shared with members and Provincial Associations in the May/June 99 *Explorer*, was revised based on member and Board input and will serve as Board direction and evaluation.

Highlights from the meeting include:

- Lynda McKeown accepts gavel as CDHA president.
- Selection of Mississauga, Ontario as the site for the CDHA Conference of September, 2001.
- Establishment of a Search Committee for a new Executive Director.
- Approval of Board ENDS policies and Board/Provincial Associations/Members linkage policies.
- Appointment of Suzanne MacIntosh, CDHA President for 1996–1997, as the CDHA Representative to the National Dental Hygiene Certification Board.
- Calling of a National Communication Planning Committee Meeting to be held in February, 2000.
- Calling of a Task Force on Post-Diploma Dental Hygiene Education Meeting in late January, 2000.
- Establishment of a planning cycle for CDHA, which will include three meetings of the Board per annum:

Winter/Spring — Budget approval, 1st meeting new Director
Summer — Teleconference
Autumn — Strategic planning, priorities, last meeting outgoing Director

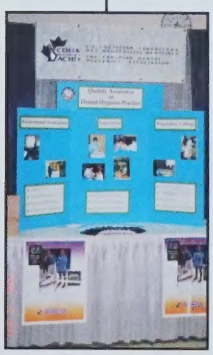
CDHA BOARD OF DIRECTORS 1999–2000

Lynda McKeown,	*President*
Salme Lavigne,	*President Elect*
Donna Bowes,	*Past President*
Dianne Stojak,	*British Columbia*
Patty Wickstrom,	*Alberta*
Angela Yarnton,	*Saskatchewan*
Natasha Kravtsov,	*Manitoba*
Barbara Gibb,	*Ontario*
Chantal Normand,	*Quebec*
Kathleen Trites,	*New Brunswick*
Karen Wolf,	*Nova Scotia*
Patti Sinnott-Curran,	*Prince Edward Island*
Cindy Holden,	*Newfoundland*
Fran Richardson,	*DH Regulatory Authorities*
Susanne Sunell,	*Dental Hygiene Educators Canada*

CDHA — Working for You!

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

CDHA Representation for Members



- In **May, 1999**, CDHA was present at the Annual Canadian Health and Life Insurance Association (CHLIA)'s Conference in Calgary. CHLIA represents the insurance industry in Canada responsible for third party payment for dental claims. Cindy Ewan, BCDHA Executive Director, represented CDHA at our booth, providing information for the delegates on legislative changes in Canada related to delivery and direct billing of dental hygiene services.
- In September, 1999, the CDHA Executive Council and Executive Director met with CDA Management and Executive Director in Ottawa to discuss opportunities for CDA and CDHA to work co-operatively on future joint ventures. A second meeting is scheduled early in the new year to continue dialogue and planning.
- On October 1st–3rd, 1999, CDHA President, Donna Bowes, attended the first International Joint conference on Geriatric Dentistry held in Montreal. CDHA, along with BCDHA, supported Barbara Heisterman's attendance and paper presentation on the important interdisciplinary role of dental hygienists in the delivery of care in residential care facilities.
- In November of 1999, CDHA Executive Director, Carol Matheson Worobey, met with the Honourable Allan Rock, Federal Minister of Health, to discuss the oral health status of Canadians and issues of importance to the dental hygiene profession across Canada.

Added Member Benefit — CDHIP Long Term Disability

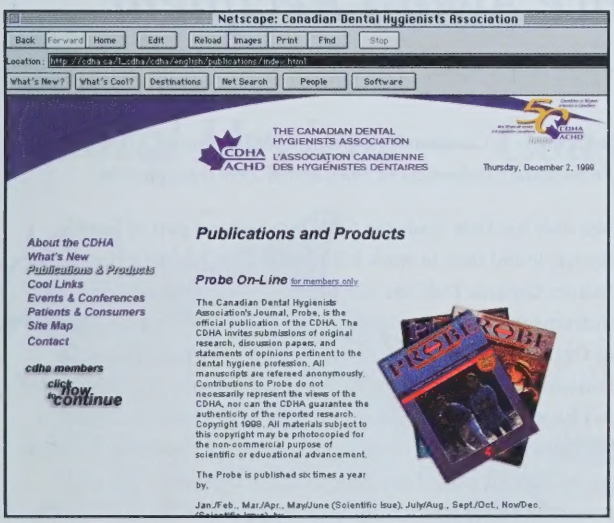
Sun Life

Following CDHA negotiation with SunLife, the CDHIP Long Term Disability benefit will no longer terminate if the CDHA member is not working an average of 18 hours a week. This is an enhancement of this benefit.

A second negotiated advantage which has been added to your long term disability benefits provides that if a CDHA member is not employed or is not working an average of 18 hours a week at the date of her/his disability, the pre-disability earnings will be the average of her/his monthly income for the 12 months immediately preceding her/his disability. This provides for those who have worked both full time and part time during the year and will benefit from all of their work hours.

CDHIP — your insurance plan specific to dental hygiene needs.

CDHA Website Recognized by Healthlinks



http://www.cdha.ca

The CDHA web site has been accepted into the **healthlinks.net** directory, the most comprehensive online directory available specifically for the use of health care professionals. Linking to **healthlinks.net** helps to build traffic through the CDHA and provides recognition of the skill and work which has gone into developing the CDHA website.

www.cdha.ca

CDHA Life Membership Recipient for 1999 — Fran Richardson

Ms. Richardson is no stranger to the more than 14,000 dental hygienists across the country. Following her graduation from dental hygiene at the University of Toronto in 1971 and her attainment of her Bachelor of Science in Dentistry degree in 1982, Fran held a variety of dental hygiene positions in four provinces — British Columbia, Alberta, Saskatchewan and Ontario. Fran was the program head of the Dental Hygiene Program at the Saskatchewan Institute of Applied Science and Technology and an instructor in the Dental Hygiene Pilot Project of Wascana Institute of Applied Arts and Sciences.

The University of Regina in 1987 awarded her with a Master of Education in curriculum and instruction, which Fran has been able to apply to her many roles in the dental hygiene world. In British Columbia she held a variety of positions at the College of New Caledonia, in Prince George, including Dean of the Division of Health Sciences and the Chair of the Division of Dental Studies.

Fran returned home to Ontario in 1995 to assume the position of Registrar and Chief Administrative Officer of the College of Dental Hygienists of Ontario, the regulatory body for the 6,200 dental hygienists practising in Ontario. Her previous Ontario professional experience includes being a teaching master at Cambrian and Georgian Colleges of Applied Arts and Technology as well as a practising dental hygienist for the Pine Ridge District Health Unit.

Fran continues to maintain a wide variety of professional and community activities in dental hygiene. Since 1998, she has served as a regulatory representative to the CDHA and has been a member of the Executive Committee of the Federation of Health Regulatory Colleges of Ontario since April 1997. Fran has served as the representative of the dental hygiene registrars to the Commission on Dental Accreditation of Canada and was a member of the National Dental Hygiene Certification Board. She is the current chair and a founding member of the Federation of Dental Hygiene Regulatory Authorities.

Fran has contributed to her professional Association at the national level. She has supported the mission of the CDHA and held a variety of positions including:

Newsletter Editor of CDHA (June 1991–June 1992), President of CDHA (June 1993–June 1994). Prior to holding these positions, she served as the Editor of the CDHA Journal *Probe* from 1987–1989 and Scientific Editor of *Probe* from 1986–1997. From 1985–1997, she was a member of the CDHA Editorial Review Committee. The dental hygiene profession and the CDHA have reaped the benefits of Fran's personal involvement. Fran has never lost sight of how her professional experiences would benefit the rest of the dental hygienists across Canada.

Fran is well known to the dental hygienists of Saskatchewan, having served as the representative to the Council of the College of Dental Surgeons of Saskatchewan from 1985–1988 and as President of the Saskatchewan Dental Hygienists Association from 1983–1984. Fran continues to share her knowledge and experience with dental hygienists across the country and the United States through regular publications in the CDHA Journal *Probe* and the Newsletter *Explorer*. She is a sought-after lecturer and has presented at conferences across Canada and the United States.

Ms. Fran Richardson is a leader and is widely known as a respected health care professional. She has provided outstanding service to the dental hygiene profession, the community and the CDHA.

CDHA Distinguished Service Award Recipient for 1999 — Dale Scanlan

Ms. Dale Scanlan has selflessly donated countless hours and served for the betterment of the profession of dental hygiene, particularly in her role with the CDHA. For the past 20 years, Dale has served in many capacities with the CDHA as Chair of Community Dental Health, as a Director of the Board, as a representative to the Canadian Dental Association Committee on Hospital Accreditation, as a Canadian Director of the International Federation of Dental Hygienists and particularly as Conference Coordinator of the Annual CDHA Professional Conferences of 1985, and of 1990 through 1994.

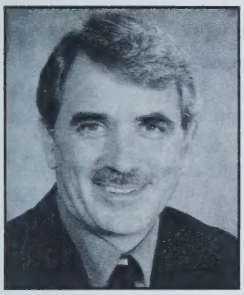
Not only has Dale made the CDHA an integral part of her life, she has found time to work full-time at the Children's Hospital of Eastern Ontario. Dale has also been President of the ODHA and instrumental in the formation of the College of Dental Hygienists of Ontario, self-regulating the profession of Dental Hygiene in Ontario. Dale has many publications and recently, she contributed to Chapter 44 — "The Patient With a Cleft Lip and/or Palate", of the *Clinical Practice of the Dental Hygienists*, 8th Edition, by Esther M. Wilkins. As part of her many contributions, Dale has also presented Table Clinics, Seminars and Presentations.

Member Recognition

CDHA is pleased to congratulate members on their recent educational achievements and awards:

- Ellen Brownstone was awarded her Doctorate in Philosophy from the University of Manitoba in October, 1999. Her thesis was titled: "A Qualitative Study of the Occupational Status and Culture of Dental Hygiene in Canada."
- Lynne Viczko obtained her Masters in Arts degree from Royal Roads University. Lynne is an educator at Camosun College in the Dental Hygiene Program in Victoria, British Columbia.
- Wendy King was awarded her Masters in Education from Simon Fraser University. Wendy currently teaches at the College of Caledonia in Prince George BC.
- Julie (Jules) Thomson was awarded her Masters in Education in leadership studies from the University of Victoria. Julie has spent four years, part-time, taking courses towards this degree, while working full-time as a dental hygienist in private practice.
- Sandra Cobban was awarded an Alberta Government Heritage Scholarship for Graduate Studies based on overall academic achievement in the previous year. Sandra is currently completing the final requirements for a Masters of Distance Education at Athabasca University.
- Terry Mitchell was presented with the WWWoods Award for her demonstration of "Excellence in Dental Education". Terry is an educator in the dental hygiene program at Dalhousie University in Halifax, Nova Scotia.

Vancouver Endodontist, Dr. John Diggens, New President of the Canadian Dental Association



Vancouver endodontist, Dr. John Diggens, assumed the office of President of the Canadian Dental Association at the association's annual Board of Governors meeting in Ottawa, September 17th and 18th.

Dr. Diggens received his dental degree from the University of British Columbia (UBC) in 1972. He obtained his certificate in endodontics and Masters degree from the University of Washington in 1979.

Dr. Diggens is a past President of the College of Dental Surgeons of British Columbia and a past President of the UBC Alumni Association. He currently chairs the Board of Green College at UBC and sits on the Board of Green Institutions at Oxford and Dallas, Texas. Dr. Diggens serves as dental/endodontics consultant to the Vancouver General Hospital and the BC Cancer Agency. He also teaches in the Department of Oral Medicine and Surgical Sciences at UBC.

Dr. Diggens is a member of the American College of Dentists, the Pierre Fauchard Academy and the Royal College of Dentists of Canada.

Dental Hygiene — Coast to Coast

BCDHA

Held their 3rd Annual Conference October 22nd–24th, 1999 in Westminster BC. The theme *Working Together* included Dental Hygiene Practice and Entrepreneurship, Breast Cancer, Periodontics Update, Dental Hygiene in the 21st Century, Clients with Addictions and Learning on the 'Net.

ADHA

Has recently hired Patti Gardiner to assist in conducting ongoing review and revision of the ADHA Local Anaesthetic Continuing Education Program.

SDHA

Held their first autumn meeting Saturday, October 2nd, 1999, which included a 1/2 day continuing education *Periodontal Case Studies Workshop.*

MDHA

On September 25th, 1999, the Manitoba Dental Association passed the motion that local anaesthetic be added to the scope of practice for dental hygienists in Manitoba. October 16th, 1999 featured the continuing education program *Tough Questions, Great Answers: Responding to Patients' Concerns about Today's Dentistry.*

ODHA

Fall Workshops for the 21 districts across the province have been held focusing on a review of jurisprudence and ethics — the process of ethical decision making.

Two members were honoured, Sharon Cavanagh and Patti Martin, who each received Distinguished Service Awards for contributions to the profession.

NBDHA

The September 1999 Board Meeting was held in Grand Falls with plans for a continuing education workshop on *Strategic Planning and Board Operations.*

NSDHA

Ms. Carolyn Sinyerd has been hired as the new NSDHA Administrative Assistant. NSDHA's input on primary health care was requested by the Nova Scotia Department of Health.

PEIDHA

September 29th, 1999 was the first meeting of PEIDHA with topics for continuing education for fall including family violence, hepatitis and HIV updates, and periodontal disease/heart disease relationship.

NDHA

In September 1999, dental hygienists in Newfoundland successfully completed their first compulsory continuing education cycle. NDHA participated in a *Health Fair for the Older Person* sponsored by the Victoria Order of Nurses (VON) in recognition of the International Year of the Older Person.

Dental Education in Care of Persons with Disabilities

The DECOD Program at the University of Washington is a special program of the School of Dentistry that prepares dental professionals to meet the special oral health needs of persons with disabilities.

DECOD's three main objectives are to: train dental professionals, including dental, dental hygiene and dental assisting students, in care of persons with disabilities; provide a community service to persons with severe disabilities that have difficulty receiving adequate care, conduct research in this field.

The patients served by DECOD span all age groups. Approximately 60 percent have severe developmental disabilities (mental retardation, cerebral palsy, autism), the remaining 40 percent have extensive acquired disabilities (e.g. spinal cord and traumatic brain injury, multiple sclerosis, psychiatric disorders).

DECOD includes several special clinics in the School of Dentistry and at extramural sites.

- pediatric, for children with disabilities
- rehabilitation for those in vocational training and independent living program
- geriatric, for elderly with disabilities
- a mobile dental service, for residents of long-term care facilities and the homebound

The University of Washington offers several formats of instruction in the dental management of persons with disabilities.

The DECOD Program is sponsored in conjunction with the School of Dentistry Office of Continuing Dental Education. For further information, please contact:

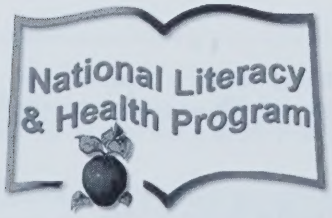
Lynn Frandsen, RDH, BS
Assistant Director, DECOD

or

Michael D. Martin, DMD, MSD, PhD
Director, DECOD
School of Dentistry, Box 356370
University of Washington
Seattle, WA 98195–6370

Telephone: **(206) 543–1546**
Fax: **(206) 685–8412**
E-mail: **dalila@u.washington.edu**

The First Canadian Conference on Literacy and Health — May 28–30, 2000



For the past six years, the Canadian Public Health Association's (CPHA) National Literacy and Health Program has worked with 26 national Health Associations, including the CDHA, to raise awareness among health professionals in Canada about the links between literacy and health. By promoting plain language health information and clear verbal communication techniques, the program has helped thousands of health professionals better serve their patients and clients. CPHA's Plain Language Service continues to offer professional plain language revision and has produced a Directory of Plain Language Health Information for North America.

In **May 2000** in **Ottawa**, CPHA's National Literacy and Health Program is hosting a conference — the first of its kind in North America — *Charting the Course for Literacy and Health in the New Millennium.* The purpose of the conference is to boost the profile of literacy as a key issue in health. CPHA hopes to bring literacy and health into focus as a valid field of research and to help forge links and partnership among literacy and health stakeholders.

The conference will feature low literacy health consumers' health stories, plain language and clear verbal communication training for health professionals and a workshop on the links between the law, literacy and informed consent that will assist health professionals in better understanding their professional liability.

Plan to join the hundreds of health professionals, government representatives, researchers and academics, literacy providers, health administrators, policy makers, adult learners and representatives of pharmaceutical companies who will all be on hand to chart a course for literacy and health into the 21st century.

For more information, please call **(613) 725–3769** or visit the CPHA website at **www.nlhp.cpha.ca**

Aboriginal Health Collection: A Unique and Valuable Resource

THE UNIVERSITY OF MANITOBA LIBRARIES

The University of Manitoba Libraries' has established an Aboriginal Health Collection, located at the Neil John Maclean Health Sciences Library in Winnipeg. The collection contains materials on all aspects of Aboriginal health including epidemiology, health promotion, design and evaluation of community-based programs, and traditional medicine.

A large portion of the collection was donated to the library by the Northern Health Research Unit of the University of Manitoba's Department of Community Health Sciences. The Aboriginal Health Collection brings together a diverse collection of reports, background papers, theses, and community-based studies which are often not listed in standard medical indexes.

Using the Catalogue to Find Information in the Collection

The University of Manitoba Libraries' online catalogue (BISON) is available to researchers on the World Wide Wed at **http://www.bison.umanitoba.ca**. Information on Aboriginal health can be found using simple keyword searches. For example, by typing in the term Aboriginal health and diabetes, a bibliography of resources on diabetes, from the Aboriginal Health Collection can be produced. Similarly, typing in the term Aboriginal health and women brings up a wide range of resources on women's health from the collection.

In addition to providing the standard bibliographic information (author, title, publisher, etc.) for each work, most of the catalogue entries must include an annotated description of the document. This helps people to find relevant information using natural language terms, including local names and terms from Aboriginal languages. For example, a keyword search on Aboriginal health and Dene retrieves a variety of resources including a Dene health conference report and a collection of elders' stories, several by members of the Dene community.

Accessing Information on Aboriginal Health

Researchers are welcome to visit the Aboriginal Health Collection in person. They may also request materials through the interlibrary loan department of their own library. If a document in the Aboriginal Health Collection is also available in electronic format on the World Wide Web, the catalogue record will provide the necessary link.

The Neil John Maclean Library has developed a guide to finding information on Aboriginal health and other resources available on the World Wide Web. To visit the Aboriginal Health Links page, go to **http://www.umanitoba.ca/libraries/njmhsl** and click on Internet Links. You'll find a link to the subject of Aboriginal health as well as other links to many health topics.

A Valuable Resource

The Aboriginal Health Collection is growing, with new resources being added continually. Please contact the Neil John Maclean Health Sciences Library if you wish to donate materials to the collection or if you have Aboriginal health materials for sale. With its varied documentation of research and programs, including materials on the traditions and experiences of Aboriginal people, this unique collection has become a valuable resource for members of the community, researchers, and community program developers.

CONTACT:

Janice Linton, Aboriginal Health Librarian,
Neil John Maclean Health Sciences Library,
770 Bannatyne Avenue, Winnipeg MB, R3E 0W3

Tel: (204) 789–3878, Fax: (204) 789–3923,
e-mail: janice_linton@umanitoba.ca

Source: CPHA Health Digest, Volume XXIII, Number 3 Autumn 1999

BC Dental Hygiene Practice and Entrepreneurship Symposium

On October 22nd, 1999 at the Inn at Westminster Quay, New Westminster, BC, thirty one registrants participated in the 1st BC Symposium on Dental Hygiene Practice and Entrepreneurship — a session for "dental hygienists with a variety of backgrounds, business experiences and practice settings who focused on entrepreneurship and functioned as a cooperative where all contributed to the success of the "group". The symposium, a financially self-supporting event, was sponsored as a pre-conference event by the British Columbia Dental Hygienists Association Conference.

After introducing themselves and indicating the area of practice, the dental hygienists, under the direction of facilitator Paula McAleese, identified issues of importance to dental hygienists in free standing practices, long term care practices and other areas of entrepreneurship. Many ideas were shared during networking and discussion sessions.

This forum will be presented again in 2000 at the CDHA Annual Conference in Victoria, B.C. — June 9–11, 2000. Plan now to attend!

National Dental Hygiene Week™

ODHA Report — 1999 National Dental Hygiene Week™ Activities

odha Ontario Dental Hygienists' Association

In an ongoing effort to meet member needs to raise public awareness about the profession of dental hygiene, and with the dramatic increase in membership for 1999, the ODHA launched an aggressive multi-media campaign which included print, radio and TV advertising and promotion. This year, special attention was given to reaching northern Ontario communities. The potential audience for this year's public awareness campaign totaled more than 8 million people.

Television

A 30-second television commercial provided an anchor for the multi-media campaign. The commercial was aired from October 13th–23rd, 1999 on ONTV, City-TV, and MCTV. ODHA secured 20 power toothbrushes which were given away as prizes on City TV's Breakfast Television and News at Six. Television programmers received a gift package, press release and the ODHA promotional brochure.

Radio

- A 30-second radio commercial (same script as the television commercial) was aired on CHUM-FM from October 18th–23rd, 1999.
- All radio stations in Ontario received a copy of the ODHA press release.

Print

READER'S DIGEST

The ODHA produced a four-page insert that appeared in the October issue of the *Reader's Digest.* The insert focused on the role of dental hygienists and their contributions to overall health. Corporate sponsorships helped to offset the cost. An evaluation on the effectiveness of the insert will be based on a survey conducted by *Reader's Digest.*

NEWSPAPERS

A press release focusing on oral health for overall health was sent to all newspapers across Ontario; 13 specialty stories about dental hygienists who work in non-traditional/unique practice settings were targeted to their hometown newspapers.

WEBSITE

ODHA launched its website during National Dental Hygiene Week™. The website address was featured in the television commercial. Between October 14th–23rd, 1999, more than 370 people visited the website.

MPP MAILING

An information package including a letter from the ODHA President, a copy of the insert from the October issue of *Reader's Digest* and a television schedule was sent to all MPP constituency offices.

STATEMENT IN THE HOUSE

A statement was delivered in the legislature to recognize National Dental Hygiene Week™ and the important contributions dental hygienists make to Ontario's health care system.

PROMOTIONAL ITEMS LIST

The ODHA makes available a variety of promotional items to assist members in their ongoing efforts to promote the profession of dental hygiene in their communities. Materials include posters, brochures, fact sheets, dental hygiene history and pens.

New to the list of items this year was a presentation kit which included camera-ready ads, advice on how to promote events and get media attention, and ideas for community outreach programs.

During National Dental Hygiene Week™, members ordered more than 4,500 copies of the new ODHA promotional brochure, which includes a profile of a dental hygienist and helpful oral care tips for the public.

Watch for more NDHW activities from across Canada in the March/April issue of Probe.

Call for CDHA Distinguished Service and Life Membership

In order for the nomination to be considered by the Association, is required the written support of **two** CDHA members in good standing. Nominators are requested to submit no more than one nomination for this award and submissions must be accompanied by a detailed curriculum vitae of the individual being named, as well as an outline of accomplishments at the national level that the nominators consider worthy of this award.

Life Membership is bestowed at the Awards Luncheon during The CDHA's 11th Annual Professional Conference in Victoria, British Columbia in June, 2000. Distinguished Service Award Recipients and Life Members are designated by the Board of Directors, who will meet in March, 2000. It would be appreciated, therefore, if you would submit your recommendation to The CDHA's Central Office **no later than February 15th, 2000.**

1 The *CDHA Distinguished Service Award* recognizes significant contributions by a dental hygienist or other person to advancing the dental hygiene profession or our Association at the **national level**, for a minimum of 4 years.

The nominee's contribution may include, but is not limited to, work on a Task Force, Committee or innovative project. The service must have been **national** in focus, made a positive impact on the profession and involved a substantial amount of personal commitment on behalf of the recipient.

2 *CDHA Life Membership* is awarded to an active member, in *good standing*, of the Canadian Dental Hygienists Association, who has made an *outstanding contribution to both dental hygiene and the Association*, at the **national level.**

Dental Hygienists nominated for Life Membership shall fulfill the following qualifications:

a) Maintained continuous CDHA membership in the active category for a minimum of fifteen (15) years
b) National involvement in dental hygiene, in an official capacity, for a minimum of ten (10) years
c) Made a significant contribution to the growth and achievement of the national Association, in comparison to others involved for the same length of time and in similar capacities.

Perio REPORTS

Bimonthly publication designed for dentists and dental hygienists concerned about their patient's periodontal health. Each issue summarizes periodontal research of specific interest to clinicians. Easy to read format keeps you up to date on the latest research findings.

Journals reviewed for **Perio REPORTS** include:
Journal of Periodontology
Journal of Clinical Periodontology
Journal of Periodontal Research
Journal of Dental Research
Periodontal Abstracts
Quintessence International
JADA, JADHA

☐ Please send sample issue for my review

☐ $48 one-year ☐ $84 two-year

Name_____
Address_____
City _____ Prov._____ Postal Code_____

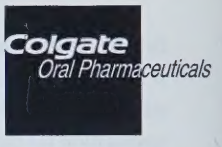
Mail to:
Perio REPORTS, P.O. Box 52090
311 - 16th Ave. NE, Calgary, Alberta T2E 8K9

GIVE SOMEONE A SECOND CHANCE.

Discuss organ donation with your family and sign a donor card today.

THE KIDNEY FOUNDATION OF CANADA

CDHA/COLGATE COMMUNITY HEALTH GRANT (1998) REPORT



Developing and Providing an Infant Tooth Decay Program for a First Nations Community

By Sherry Saunderson, RDH

Dental hygiene journals have published a number of excellent articles in the past few years on the need for our aging population to have increased access to oral health services. Geriatric care is attracting more dental hygienists than ever before who seek an alternative practice setting. However, a second group in our population is very much in need of access to culturally sensitive dental care — services that our profession could offer. They represent about 3 percent of the total Canadian population — nearly 80,000 people in the 1996 census. These are Canada's First Nations people.

The Cowichan Tribes is the collective name for the inhabitants of six original villages nestled along the Cowichan River and around the City of Duncan, on Vancouver Island. It is the single largest Native band in British Columbia. In December 1997 the Tsewultun Health Centre of the Cowichan Tribes reported 4048 registered Cowichan clients of whom 2196 were under the age of 25.

The level of health of First Nations people is significantly lower than that of the general Canadian population. Indications are that the dental treatment requirements for this segment of the Canadian population are two to four times that of the average of all Canadians.[1] In 1986-87, dental caries represented the most frequent reason for hospitalization at the Cowichan hospital, and represented 5.5 percent of all diagnoses for that time period. A 1991 audit of pediatric dental cases requiring a general anesthetic (G.A.) found that 76 percent of the cases concerned First Nations' children. The following year a second audit revealed that 80 percent of the children hospitalized for this service were First Nations with the average length of operating room (O.R. time per child being 116 minutes).[2] In the years following, the allotment of O.R. time available for clients needing dental services provided under general anesthetic was cut back. Parents and local dentists voiced concerns that children needing urgent treatment were suffering, and required prolonged intake of analgesics and antibiotics until treatment could be obtained.

Health Services were fully transferred from the federal government to the Cowichan Tribes in May of 1992. Their health centre is one of the few transferred health centres to maintain direct accountability to Chief and Council as opposed to being incorporated under a board, as a non-profit society. This is one of their greatest strengths. Recommendations for policy and programs comes from an appointed Health Advisory Committee made up of 12 members, 10 of whom are from the Cowichan community.

In 1996, while on a sabbatical after 26 years of working in private practice, I learned that the Director of the Tsewultun Health Centre at Cowichan Tribes wished to develop a preventive dental health program. While I had lived for 32 years only 30 minutes away from the Sarcee Reserve in Calgary, and later had driven through the Cowichan Reserve on my way to work for 12 years, I had no first hand knowledge of First Nations culture. I had wanted to work with Native peoples for years and had an strong interest in their spiritual connection with nature, the land and the Creator.

In February 1997, after presenting several proposals to the Health Director, I was hired as a consultant for one day a week. My target population for the new program were the caregivers of infants and toddlers. Data collected at the health centre during the pre-kindergarten screenings of 69 children born in 1992, indicated that fully 78 percent of the children had experienced infant tooth decay. Only 15 children had intact anterior teeth. (*See Appendix A*).

Our **first objective** came to be to reduce the rate of infant tooth decay in the Cowichan community by 50 percent in five years.[3]

A survey of 281 households in Cowichan in the summer of 1997 confirmed that a large number of individuals neither take their children nor themselves go to the dentist unless they believe it to be an emergency. Fifty percent of respondents stated that they never go to the dentist or only go in an emergency. For the 72 percent of respondents who have children, 31 percent answered that they either never take their children to the dentist or take them only in an emergency. This situation exists in spite of the fact that dentists are readily available in this urban area, and the health centre has taken an active interest in the primary prevention of tooth decay

and the encouragement of parents to take their children to the dentist on a regular basis over the past five years. As basic dental care is covered for Cowichan clients under Non-Insured Health Benefits with the Medical Services Branch of the federal government, the cost of dental treatment is not a factor in dental avoidance. Clearly, availability of dental care does not translate into accessibility. The **second objective** would be to increase the percentage of children and adults who regularly (at least once a year) seek dental services on a non-emergency basis by 10 percent per year. The **third objective** would be to reduce the number of children requiring G.A.'s for the treatment of decay by 10 percent per year.[4]

Perceived challenges

Personal experience and working habits: While I had many years of experience in private general practice, I had not worked in community health before. The production-oriented private practice environment where each chair is considered an income center, and the conditioning to use every minute productively was a liability when I started working in community health. I felt guilty having a coffee with staff in spite of this being the best time to listen and learn about the community and events happening with families. The centre operates some programs on a drop-in basis, and on slow days I felt I should be "out there doing something".

Solution: Our services are community-based and program-centred in nature. Long time community health nurses at the health centre repeatedly stressed the importance of my presence at various programs offered to the caregivers of young children. Just my presence at events and giving parents the opportunity to get to know me, to learn to trust me and to form a relationship with me was vital if the Infant Tooth Decay Program was to succeed. I attended "Mother's Morning Out" gatherings, prepared crafts with young mothers, listened at New Parents Program meetings, spoke to Pre-Natal Classes at the "House of Friendship", visited the local Native kindergarten for "brush-ins", and was available on Tuesday Well Baby Days.

I was also blessed with the personal acquaintance and help of several very knowledgeable community health dental hygienists in both Victoria and Nanaimo who gave me support and networked with me. They introduced me to some wonderful resources for First Nations clients and once I connected with professionals involved with First Nations health, new material just kept appearing for me.

Cultural training and knowledge: Cross-cultural training and some knowledge of my clients' beliefs and attitudes was absolutely necessary for this position. Ideally, this position would have been offered to a First Nations dental hygienist but to my knowledge there are only two First Nations dental hygienists in B.C., both working elsewhere. Understanding the multifaceted influences that affect health outcomes in my target population was critical. It is not enough to design a program and then to tack on a cultural component. The Cowichan culture is integral to all of the programs offered at the health centre.

Solution: I am working with an interdisciplinary team of health professionals and community workers in this oral hygiene position. Most of my co-workers are Coast Salish or from other bands. They offer a wealth of information, stories and knowledge about First Nations within the context of their own experiences. First Nations cultures are an oral culture, and their original language was their soul. Listening skills are vital and I remind myself constantly that I am here to learn more than to teach.

I also enrolled in three semesters of First Nations Studies (Women's Studies and Canadian Native Literature) at the local college. My professors and 70 percent of my classmates were Aboriginal. Classroom discussion of the course material was stimulating, enlightening, and emotional. These courses opened doors for me in understanding how a marginalized and oppressed people have managed to survive against great odds and losses.

Aboriginal Health

There is no shortage of literature documenting the relationships between poverty, unemployment, substandard and overcrowded housing, environmental exposure, and health, as well as the relationship between health and the more subjective indicators of low self esteem and self worth, boredom and anger or frustration. Low levels of education, high unemployment, poor housing, child abuse, drug and alcohol abuse and the loss of culture have resulted in an increase in family violence in Aboriginal communities.

When data from the health status of Canada's Aboriginal population is pieced together, Natives consistently fare worse than their non-native counterparts. Rates of communicable disease, diabetes, cardiovascular disease, dental disease, suicide, alcohol and drug addiction are higher than in the rest of the Canadian population. Life expectancy is lower and infant mortality much higher in the Aboriginal population. Accidents and violence are major causes of deaths among Canada's indigenous peoples; *much* higher than in comparable indigenous groups in Australia and New Zealand.[5]

Why does such inequality in health exist and persist between Native and non-Native groups, both of which have universal access to health care, free of financial barriers? The answers lie in the legacy of colonial institutions known as Residential Schools in Canada.

Indian Residential Schools

From the 1800s until the 1980s, First Nations' children attended Residential Schools. The Canadian government funded 88 Indian Residential Schools nationally that were administered by Christian churches. These schools were the principal strategy of the policy known as "aggressive civilization". The stated purpose of residential schools was to strip Aboriginal children of their culture by stripping Aboriginal cultures of their children. The goal of the residential schools was not to educate but to assimilate a people into a society modeled on European cultural traditions.[6]

In 1920 a law was passed under Duncan Campbell Scott, Superintendent General for Indian Affairs making it mandatory that every Indian child between the ages of seven and fifteen attend an Indian Residential School. Scott, speaking to the 1920 mandatory law, said: "Our object is to continue until there is not a single Indian in Canada that has not been absorbed into the body politic; and there is no Indian question, and no Indian department"[7].

John A. MacDonald, Prime Minister of Canada, told the House of Commons in 1884: "I think we must, by slow degrees, educate generation after generation, until the nature of the animal almost is changed by the nature of the surroundings."[7]

Children entering these "total institutions" experienced isolation from their family and culture, feelings of abandonment, loneliness and a loss of identity. Forbidden to speak their own language, they were stripped of all personal possessions, numbered and kept apart from siblings. Strict discipline and order was maintained by harsh

measures; instant obedience was expected. Children witnessed and experienced violent beatings, insults and intimidation, public humiliation, shaming and daily strapping for even the smallest transgression. The lack of comforting, affection and attention for these children as well as their segregation by sex and age made it difficult for them to relate to their siblings and to members of the opposite sex in relationships later on as adults. Aboriginal teachings, knowledge, diet and traditional practices were labeled heathen or primitive. Mental, physical, spiritual and sexual abuse was prevalent.[8] Only a few hours each day was spent on education, and that was laced with a heavy dose of religious dogma. Long hours were spent in manual labor as the children cleaned, did laundry, cooked in the kitchen and worked in the agricultural fields for free to reduce the operating costs of the school.

For 10 years, Aboriginal children were raised not by their parents, but by a colonial institution. They returned to their communities full of shame for the traditional ways, unable to speak their own language to their Elders, and traumatized by their experiences. Some families had five consecutive generations attend residential schools. The complex system of abuses over several generations has had far-reaching consequences for Native people down to the present. These traumas are reflected in personal experiences of isolation, silence, loss of identity, loneliness and depression, which are in turn reflected in high rates of suicide, violence towards others (sexualized assault, fighting, spousal assault, beating of children), substance abuse, crime, and poverty. As well, Aboriginal persons are disproportionately represented in special education programs, prisons and child-welfare statistics. They are also more likely to drop out of school — though the refusal of aboriginal children to attend schools that reflect the values of the dominant culture and publicize misleading information about aboriginal people might be seen as an act of resistance than as a failure or a "dropout".[9]

First Nations Dental Health

Prior to World War II, there was no reason for the government to keep statistics on the dental health status of Canadian Aboriginals. Dental disease was not a problem. In B.C., the Native diet was diverse, with food resources bountiful but seasonal. Fish, bivalves, crustaceans, marine mammals, lean game meat, and wild roots, green vegetables and berries made up the diet prior to European contact. It was low in fat, higher in fibre, higher in mineral content and lower in sodium when compared to typical diets in industrialized agricultural countries.[10]

Residential schools changed, in very dramatic fashion, many of the food habits of Aboriginal peoples throughout North America. The diet of children was similar to that provided by institutional kitchens nearly everywhere. To be inexpensive, the food had to be low in quality and bought in bulk; hence it was monotonous, starchy and full of fats. Special treats were rare, but inevitably they were high in refined sugars (monosacharides) and fats. As children, they often did not acquire a taste for traditional foods, knowledge of their modes of collection and preparation, their names and uses, and most importantly, many lost an essential respect for the culture and environment which had provided them. With the coming of the Europeans, the indigenous diet changed. There is a great deal of evidence showing increased over-nutrition due to saturated fats, sugars and starches, refined salts, alcohol and caffeine. Also, there has been a decrease in both fibre and marine food consumption.[11] Concurrently, there has been an increase in the prevalence of western eco-metabolic diseases such as non-insulin dependent (or adult onset) diabetes mellitus, general cardiovascular disease and dental disease.

Dental treatment for children in the residential schools consisted of infrequent visits to the school by a dentist employed by the Department of Indian Affairs. A room would be made available to him, and the children would be sent in for treatment. Consistently, when I have asked older Cowichan community members to share their early dental experiences with me, they remember having extractions without anesthetic and not being offered "fillings". Many felt they should never have lost so many teeth, but the dentist "didn't care".

MY PROFESSOR AT COLLEGE, WHO IS COWICHAN, OFFERED ME THESE COMMENTS ON HEALTH AND DENTISTRY:

> "I do not know how doctors or dentists were chosen to serve Indian people. However, there were dentists and doctors who were identified as Indian Doctors and Dentists. Indians could go to those certain doctors and dentists. This is where you hear the horror stories of these professionals being drunk on the job, slapping or hitting patients, sexually abusing patients, over-medicating, putting in temporary fillings, not cleaning but billing for services, not freezing for fillings, and so on. The treatment that Native people under the "care" of these professionals in many cases was appalling. Non-Native people would not have allowed this kind of treatment for as long as Native people had to bear it. Part of the lack of professional treatment towards Indians was that there was no accountability within the medical and dental systems. No one at the medical services end questioned the services given or treatment that was given, nor did there seem to be anyone who would advocate for Native people. Only when budgets became tighter did there seem to be more accountability toward individual Native people."[12]

For the majority of Cowichan adults, the residential school environment was their first contact with a dentist. In this oppressive atmosphere and given the dental practice of the time, it is not surprising that dental care is associated with pain, the pulling of teeth, intimidation and racism. I believe this is the primary reason that the availability of dentists does not translate into accessibility in many First Nations communities today.

Infant Tooth Decay Program

Since February, 1997 the program has been under development. It now includes:

- a task force made up of Cowichan community members, Elders, parents, health centre staff and medical/dental professionals from the area. This task force is to give direction to the program.
- a library of audiovisual materials, including five videos on infant feeding practices, a poster display on brushing baby's teeth, three dental videos for elementary school-age children, a large toothy dinosaur puppet and story for classroom brush-ins, and culturally appropriate counseling booklets *Stop Tooth Decay Among our Native American Children* for First Nations caregivers, and information sheets on healthy snacks and dental care have been created. My clients are visual learners, and informational type hand-outs have

been created for a grade five level of literacy. Government brochures, usually written to a grade nine or ten level, are generally inappropriate for my target population.

- Thirty-three staff at the health centre have attended a three-hour training session on baby bottle tooth decay (BBTD) and one-on-one counseling.
- a fluoride supplement program has been reinstated at the health centre for children six months to six years of age. It was discontinued a number of years ago by MSB due to low compliance. We also have children's toothpaste, toothbrushes and floss for our young clients.
- our sipper cup exchange program "Trade a bottle for a cup" starts at six months of age with the goal of weaning toddlers off the bottle by the age of one.

In 1998, 11 focus group interviews were held with various community groups to study the feeding and comforting practices of Cowichan families today. Toddlers were staying on the bottle longer, and using it more often than even three generations ago. Naptime bottles and bottles used to quiet youngsters while on outings, as well as sweetened liquids in the bottle were now common practice.

Some children do not own toothbrushes. Some caregivers have never experienced their own teeth being brushed by their parents and so must be shown what is expected for their new infant. I cannot assume my client knows what to do when advised to "brush little Jimmy's teeth before bed" or "read a bedtime story to your child to start a good habit of reading". Learning is hands on, experiential. At the community level, although there is enormous potential, many families lack basic skills for parenting, learning and self-care. This can be linked to the impacts of colonialism and the dependency syndrome acquired by many people after generations under the old institutional system.

Our message of prevention and intervention is being "institutionalized" within the health centre so that staff in every program are aware of the causes of early infant tooth decay and are trained to offer help to clients. The responsibility of encouraging behavioral changes in feeding practices no longer lies solely with the dental hygienist but is shared by all staff.

CDHA/Colgate Community Health Grant

The funding from the Community Health Grant was used to further develop and enhance the Infant Tooth Decay Program. Working with the Principal at the local Native kindergarten school, we hoped to co-create a program that combined literacy and dental awareness for children and parents. Presently children are encouraged to take a book home from the school's lending library to be read to daily, to promote reading skills and to teach parenting skills. The Colgate Grant was used to purchase 201 children's books on dental topics, from 20 different titles. These books were given to the Native kindergarten, nearby daycare centre, our own Infant Development Program, and to the librarians at four local elementary schools who have a large First Nations enrollment. Each donation was for approximately 25 books. The reason for the literacy addition to my program was two-fold:

- we remind parents that it is never too early to start reading to their children, making it a part of daily activities, and helping to stimulate their language development. Increasing levels of literacy early on is important, as only 10 percent of Cowichan students who are of an eligible age to graduate from high school each year actually do so. Those that do, often graduate from a modified program that does not allow them to continue on academically into university.
- Many of the young children I have seen have never experienced a regular dental visit for a check-up. They have had treatment in a hospital under a G.A. and may appear several years later needing a second hospital admission. Five book titles deal with visiting the dentist and all cover the importance of teeth and regular brushing.

A portion of the Colgate funding was used to purchase a small easily portable TV/VCR unit. Bearing in mind that my clients are, for the most part, visual learners, I use this for one-on-one counseling with caregivers allowing us to view the infant tooth decay videos together.

This Infant Tooth Decay Program is still in its infancy. Future plans include the training of parent volunteers and tribal employees to be able to act as counselors on tooth decay within the community. In October 1997, I received a supportive letter from Dr. Kit Shaddix, Baby Bottle Tooth Decay Coordinator, Division or Oral Health, at the Centers for Disease Control and Prevention in Atlanta. He wrote "Always remember what a wise lady once told me about these endeavors — it is a 'long-term, small steps, ripple effect' commitment. Good luck on your 'small steps'." The two years I have spent working on the reserve have been some of the most rewarding and satisfying of my career. I am already seeing a change in how my young clients feel about their dental health. I encourage other colleagues to be open to opportunities for change and fulfillment.

Epilogue

In July of 1999 after much negotiation between the Medical Services Branch, Pacific Region and Tsewultun Health Centre of the Cowichan Tribes, a Dental Health Centre was opened on the reserve. The two-chair dental office employs a dental therapist, a Cowichan certified dental assistant, a dental hygienist and the supervisory services of a dentist on a part-time basis. This comprehensive program includes the provision of prevention, early intervention and treatment services within the milieu of the Cowichan culture. The remainder of the Colgate Community Health Fund was used to upgrade the model of the ultrasonic cavitron unit purchased for the clinic. I am fortunate to be now providing much needed clinical oral hygiene services to my clients one day a week without a fee-for-service, and with no limitation on the frequency of visits. I will continue to participate in the Well Baby Days with the Infant Tooth Decay Program on Tuesdays.

I would like to take this opportunity to thank the CDHA and Colgate for providing funding to community health projects such as mine. This experience is an extremely fulfilling one for me, both personally and professionally. I welcome the opportunity to share what I am learning with other dental hygienists who may be ready to co-create similar programs with First Nations communities. Huy' ch qa.

All My Relations.

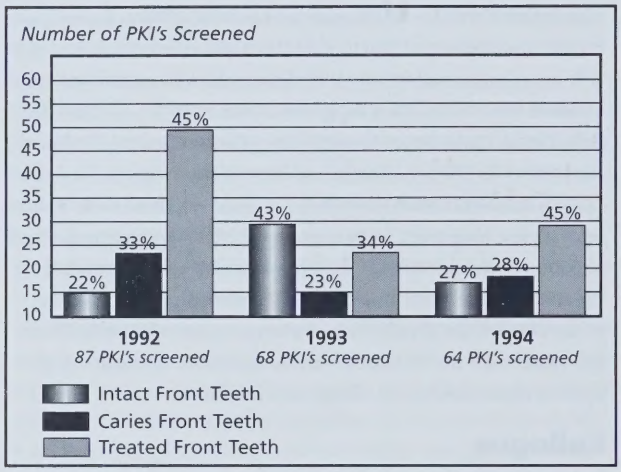
Appendix A

Starting in 1997, the PKI's (Pre-Kindergarten screenings of 5 year olds) included dental data for the first time. The four upper front teeth were checked by staff for:

- intact
- missing
- crowned
- decayed

Extracted and crowned indicated "treated". Decayed could also mean dentist opted to leave and observe but this usually was not the case. Intact teeth also could have caries present on molars, or treated back teeth, but we were only concentrating on caries on front teeth, usually as a result of feeding/comforting practices.

DENTAL SURVEY FOR TSEWULTUN HEALTH CENTRE



References

1. Trueblood, Gordon: Dental Therapy Program Review, Report prepared for the Medical Services Branch, Non-insured Health Benefit, Pacific Region, 1997.
2. Health Advisory Committee for the Tsewultun Health Centre for the Cowichan Tribes: Proposal for a Comprehensive Dental Program for the Cowichan Tribes, December 1997
3. Ibid.
4. Ibid.
5. Elliott, S., Foster, L., Harris, J., and Stephenson, P. eds.: A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia, Canadian Western Geographical Services, Vol. 31, Victoria: University of Victoria, Department of Geography, 1995, p.103, 1995.
6. Ibid. p. 171-172
7. Report of the Nuu-chah-nulth Tribal Council, Indian Residential School Study 1992–1994. Indian Residential Schools: The Nuu-Chah-Nulth Experience, p.193, 195, 1996.
8. Elliot, S. *et al* eds.: Persistent Spirit, p. 172
9. Ibid. p. 173–174
10. Ibid. p. 133
11. Ibid. p. 142–143
12. Ruth Kroek: Malaspina College (e-mail, May 14, 1998)

Recommended Reading

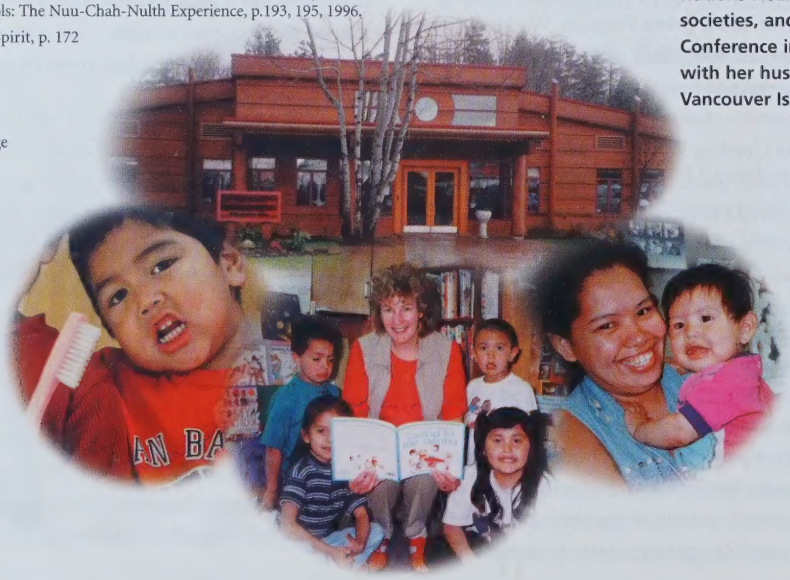
FOR THOSE WISHING TO LEARN MORE ABOUT CANADA'S FIRST PEOPLES

Thomas King: *All My Relations*
Harold Cardinal: *The Unjust Society*
Shirley Bear: *Enough is Enough, Voices Under One Sky*
Beatrice Cullerton: *The Search for April Raintree*
Marie Campbell: *Halfbreed* (the autobiography that opened the doors for Native authors)
Howard Adams: *Prison of Grass*
Thomas King: *Green Grass, Running Water*
Emma La Roque: *The Sacred Hoop, Defeathering the Indian*
Robert Calihoo: *Occupied Canada*
Bet Oliver: *Spring Rain* (historical fiction)
Moses and Goldie (eds): *An Anthology of Canadian Native Literature*
Olive Dickason: *Canada's First Nations* (comprehensive!)
Writing the Circle, My Name is Seepeetza (Residential school experience written from a child's perspective)
Elliott, S., Foster, L., Harris, J., and Stephenson, P. eds.: *A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia*, Canadian Western Geographical Services, Vol. 31, Victoria: University of Victoria, Department of Geography, 1995: Report of the Nuu-chah-nulth Tribal Council, Indian Residential School Study 1992–1994. Indian Residential Schools: *The Nuu-Chah-Nulth Experience*, 1996.

Sherry Saunderson graduated in 1969 from the University of Alberta with a diploma in Dental Hygiene. Her 27 years in general private practice experience includes three months in a Sydney, Australia practice during overseas travel in 1972.

Sherry is a Past President of the Southern Alberta Dental Hygienists Society and the Alberta Dental Hygienists Association. In 1977 Sherry received the American Dental Association's Community Preventive Dentistry Meritorious Award for a dental health program in the British Virgin Islands.

Sherry has delivered presentations on First Nations Health to dental hygiene students, societies, and the Inter-Tribal Health Conference in the past year. She lives with her husband in Cobble Hill, on Vancouver Island.



11TH ANNUAL CDHA PROFESSIONAL

Conference

THE VICTORIA CONFERENCE CENTRE
VICTORIA, B.C. JUNE 9TH–11TH, 2000

Registrants MUST make their own hotel reservations before May 1st, 2000

We are pleased to announce that all public buildings in Victoria are non-smoking.

HOTEL INFORMATION

Clarion Hotel Grand Pacific

Overlooking Victoria's Inner Harbour and the Olympic Mountains, the Clarion Grand Pacific boasts European style accommodation and four star service. This world class hotel provides you with a gorgeous 25-metre pool, squash and racquetball courts. All together, everything you might desire.

Rooms available include:

King or double/double: one king or two double beds – $175
Junior Suite: king bed sitting room – $225
(based on single/double occupancy)

- $30 extra for each additional adult per room per night
- $40 extra for room with a harbour view

For more information:

Telephone **1–800–663–7550**
Fax **(250) 386–8779**
Internet **www.hotelgrandpacific.com**

Chateau Victoria Hotel

Across from the Victoria Conference Centre, this Four Star Award hotel is a truly elegant place to stay in the heart of Victoria's Inner Harbour area. With indoor pool, whirlpool and exercise room; magnificent panoramic rooftop dining and elegant rooms, this will be a memorable place to stay.

Rooms available include:

Standard Room: two doubles or 1 queen bed – $105
One Bedroom Suite: three different room configurations available – $135

- based on single/double occupancy
- $15 extra for each additional adult per room

For more information:

Telephone **1–800–663–5891**
Fax **(250) 380–1950**
Internet **www.chateauvictoria.com**

The Empress

Surrounded by the picturesque Inner Harbour and attached to the Victoria Conference Centre is the magnificent landmark Empress Hotel. It gleams with the timeless elegance of a grand heritage hotel. Relax and enjoy the daily ritual of the famous afternoon tea or unwind in the fully-equipped health club facility. The lovely rooms capture the grace of the Victorian era.

Rooms available include:

Canadian Pacific room – $175
Deluxe one bedroom suite – $475
Deluxe two bedroom suite – $635

- based on single/double occupancy
- $25 extra for each additional adult per room per night

For more information:

Telephone **1–800–441–1414**
Fax **(250) 389–2747**
Internet **www.cphotels.ca**

Executive House Hotel

Across the street from the Victoria Conference Centre sits your choice of first class accommodation. Enjoy spectacular views of Victoria's west coast setting from your spacious room. After meetings, try the full facility health club or enjoy a meal in the first class restaurants. Luxury, comfort and service for your enjoyment.

Rooms available include:

One Bedroom Suite: King or Queen bed in bedroom or two twin beds – $115

- based on single/double occupancy

For more information:

Telephone **1–800–663–7001**
Fax **(250) 385–1323**
Internet **www.executivehouse.com**

Preliminary Program

BROADENING OUR
PROFESSIONAL HORIZONS

11TH ANNUAL CDHA PROFESSIONAL Conference 2000

THE VICTORIA CONFERENCE CENTRE
VICTORIA, B.C.
JUNE 9TH–11TH, 2000

Friday, June 9

Panel Discussion: Opening Doors to Residential Care

Susan Nye, Yvonne Smith, Maxine Borowko, Dianne Stojak, Fern Hubbard, and Anita Vallee

Discover how B.C. dental hygienists opened doors to deliver care in long-term care facilities! The panel will discuss the process from a variety of perspectives, examine the barriers along the way and will look at the delivery of residential care from various viewpoints. One of the presentation highlights features the experiences of a Vancouver Island dental hygienist who has had a positive impact on care delivery in her community.

Martin Collis

Martin Collis Ph.D.

Keynote Address: Healing, Humour and High Level Wellness

"Some speakers want an hour of your time, I want a piece of the rest of your life!" Renowned speaker, author and entertainer on the subject of health and wellness, Dr. Martin Collis' dynamic performance will get you motivated to be your personal best. Using music, comedy and a unique perspective on human performance, Martin's presentations will get you ready for your next professional challenge!

Pre-Conference Session

Thursday, June 8

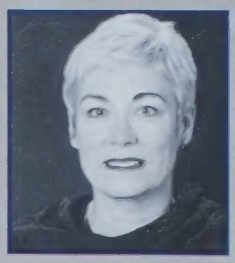
Dental Hygiene Educators Canada Workshop

Dr. Sonja Leziy

Y2K Compatible Periodontics: Bringing Periodontal Therapy into the New Millennium

This lecture will review the latest instruments, techniques and materials employed in periodontal therapy. Dr. Leziy will discuss the dental hygienist's role in recognizing periodontal disease, its consequences and current treatment modalities.

Margaret Walsh



Margaret Walsh RDH, MS., Ed.D.
Professor, Department of Dental Public Health and Hygiene, University of California at San Francisco

Human Need Theory and Tobacco Cessation: The Role of the Dental Hygienist

Dr. Walsh, co-editor of the textbook *Dental Hygiene Theory and Practice*, will provide an update on dental hygiene human needs theory. She will show you how to incorporate tobacco cessation techniques into your practice and how to work with your clients to improve their oral health.

Peter Bennet

Dr. Peter Bennett
Naturopathic Physician, Certified Acupuncturist, and Board Certified Homeopath

Session 1: ***Oral Manifestations of Nutritional Disease***

Session 2: ***Nutritional Medicine and Dentistry***

A brief historical review of oral nutritional medicine followed by some practical examples commonly found during clinical care provided by dental hygienists, and much more!

President's Reception
Royal B.C. Museum

Come join the CDHA President at the world famous Royal British Columbia Museum where we will enjoy B.C. wine and delicacies native to the West Coast. Stroll through the cobbled streets of Old Town, or relax at the Homestead as you meet colleagues and renew friendships.

Marilyn Goulding

Marilyn Goulding, RDH, BSc, MOS

Zeroing in on Site-specific Therapies

Periodontal diseases have been shown to be site-specific and episodic. Initial therapy always includes thorough scaling and root planing. However, evaluation appointments often end in frustration as the dental hygienist struggles with alternative therapies for troublesome, non-responsive sites. Antibiotic therapy (by referral dentists) has shown mixed results with the effects being short-term. Given the recurrent nature of these infections researchers began (in the '70's) to invesigate local delivery alternatives to avoid the systemic drug pitfalls of sensitivity and resistance. This session will take you on a tour along the development of local delivery choices and will describe the new alternatives currently underway. This discussion will be most pertinent to dental hygienists currently working in a periodontal setting open to non-surgical alternatives.

Peggy McCann

Peggy McCann, B.Sc., M.A.
A Movement Education Specialist and Director of Back in Action Health Education Services Ltd.

Ergonomics and the Dental Office

The best prevention is knowledge. Peggy will discuss common ergonomic risk factors, the demands of the job, how one performs one's work (personal body mechanics, positive or negative work habits), and practical changes that can be implemented.

Leslie Guild CDA,
Certified Hellerwork Practitioner

Repetitive Strain Injury: Treatment and Prevention

Learn about early detection and individualized treatment programs for repetitive strain injuries such as carpal tunnel syndrome and tendonitis.

Barb Heisterman

Barb Heisterman, Dip.DH., EDH

Who Generated the Boom?

A discussion of the oral health needs of the elderly population, with a specific emphasis on those with multiple chronic disabilities. Who are they? Are we as dental hygienists ready, willing and able to meet the challenge?

CDHA Town Hall Forum

Joanne Clovis

Joanne Clovis, Dip.DH., B.Ed., M.Sc.

Partnerships to Prevent Oral Cancer

Ms. Clovis will provide an overview of contemporary concerns about oral cancers and some of the current evidence regarding the knowledge, opinions and practices of the health professionals who play a critical role in primary and secondary prevention. Strategies and techniques will also be illustrated that dental hygienists and other health care providers and their clients can practice to prevent and detect oral cancers.

Martin Collis, Ph.D.

Closing Ceremonies followed by Closing Address

Accommodation

Rooms have been reserved at *The Empress Hotel, The Clarion Grand Pacific Hotel, The Chateau Victoria and The Executive House Hotel.* **These rooms will be held until May 1, 2000 only. Please reserve early.** To find out more about hotel rooms, see the enclosed registration form or visit the CDHA web site at **www.cdha.ca**. Here you will find links to the hotel web sites, where you can view rooms and find entertainment options and activities in Victoria.

Marketplace

Marketplace is an opportunity for dental hygienists to share their interests, hobbies and enterprises. Tables will be available for a small fee. If you wish to book a table to display or sell items at the **CDHA Conference**, please contact **Lynne Viczko** by e-mail at **lviczko@vanisle.net** or by phone at **(250) 475-3201**

Community Connections at CDHA

- **Connect with your colleagues**
- **Hear about program innovations**
- **Share your expertise**

A morning of dynamic exchange for those in community and non-clinical practice settings at
CDHA's 11th Professional Conference
Victoria, B.C.,
Sunday, June 11, 9:00 a.m.

Commercial Exhibits will be set up Friday afternoon and Saturday.

THE TIMEBENDERS

CANADA'S GOOD-TIME GURUS OF RETRO ROCK N' ROLL

Saturday Night Events: A Feast for Body and Soul

Come enjoy a dinner prepared by the world renowned Empress Hotel kitchens, followed by the music and showmanship of the Timebenders. As they perform music from the 50s, 60s and 70s, they'll have every hand clapping and every toe tapping. Canada's good time gurus of rock and roll will impress you with their costumes and high energy. Expect lots of audience participation and impressions of the Beatles, Elvis, Roy Orbison and more! It's an evening to kick off your shoes and kick up your heels.

See you there!

CDHA ACHD
partnerships in health

BROADENING OUR PROFESSIONAL HORIZONS

CDHA's 11TH ANNUAL PROFESSIONAL CONFERENCE
JUNE 9–11TH, 2000

Partnerships in Health

DELEGATE REGISTRATION FORM

Payment must accompany the complete registration form. Please make a copy for your files.

Last Name _____ First Name _____

Preferred Mailing Address _____

City _____ Province _____ Postal Code _____ E-mail _____

CDHA ID Number _____ Tel (home) _____ Tel (work) _____

PRE - CONFERENCE PROGRAM

Registrants for the pre-Conference program must be registered for at least one day of the Conference proper.

- **Opening Doors to Residential Care, A Panel Discussion** (advance registration is required)
  Panelists include: Susan Nye, Yvonne Smith, Maxine Borowko, Dianne Stojak, Fern Hubbard and Anita Vallee

  Friday, June 9th, 2000 — 8:30 11:30 a.m.

❑ no charge

CONFERENCE REGISTRATION

REGISTRATION FEE STRUCTURE (GST INCLUDED)	Full Registration		Daily Registration		
	EARLY BIRD Mar 31	AFTER Mar 31	EARLY BIRD Mar 31	AFTER Mar 31	
1. CDHA MEMBER	$245	$295	$135/day	$160/day	Fri__ Sat__ Sun__
2. NON MEMBER (dental hygienist)	$435	$485	$185/day	$220/day	Fri__ Sat__ Sun__
3. Allied Health Professional	$310	$320	$150/day	$180/day	Fri__ Sat__ Sun__
4. STUDENT MEMBER					
no meals	N/C	N/C	N/C	N/C	Fri__ Sat__ Sun__
with meals/Friday Reception	$130	$150	$50/day	$60/day	Fri__ Sat__ Sun__

SUBTOTAL of all selected dates $ _____

1. Full Registration includes access to Friday Reception, scientific sessions for Conference proper, exhibits, breaks, luncheons and Saturday evening Social Event.
2. Daily Registration includes the following:
   - Friday: Scientific sessions for Conference proper, break, evening Reception;
   - Saturday: Scientific sessions, lunch and exhibits *(does not include Saturday evening Social Event);*
   - Sunday: Scientific sessions, breaks
3. Providing you are a member of your Professional Association.
4. Tickets are available for registrants wishing to purchase extra seats for the Saturday evening Social Event. Fee: $50 (GST included) per person ❑ $ _____
5. For daily/student registrants, where the Social Event is **not included**, tickets may also be purchased. Fee: $50 (GST included) per person ❑ $ _____

ADVANCE REGISTRATION ENDS May 26th, 2000. AFTER THIS DATE PARTICIPANTS MAY ONLY REGISTER ON-SITE AT THE VICTORIA CONFERENCE CENTRE IN VICTORIA.

PLEASE NOTE: Blocks of rooms at various hotels have been reserved for Conference Registrants, which will be held until MAY 1st, 2000 only. For guaranteed accommodation, please book prior to MAY 1st. See HOTEL/TRAVEL INFORMATION on page 19 for details.

$ _____
TOTAL (add all above)

BROADENING OUR PROFESSIONAL HORIZONS

CDHA's 11TH ANNUAL PROFESSIONAL CONFERENCE
JUNE 9–11TH, 2000

Partnerships in Health

DELEGATE REGISTRATION FORM (cont'd)

GENERAL INFORMATION FOR CONFERENCE PARTICIPANTS

EARLY BIRD DRAW

Registrations received prior to **MARCH 31st, 2000** are eligible to win either free registration to the Conference, or one free night accommodation at the Chateau Victoria Hotel.

CANCELLATION POLICY

If cancellation notice is received in writing prior to **MARCH 31st, 2000** a refund less $25.00 administration fee will be issued. After **MARCH 31st, 2000**, a 50 per cent refund will be issued. No refunds will be issued after **MAY 26th, 2000**.

* The College of Dental Hygienists of British Columbia (CDHBC) will provide a Continuing Education Credits Request Form, which will indicate credits allowed for each session. For all other provinces, it is the registrants' responsibility to contact their provincial licensing body to verify applicable continuing education points and determine acceptable "proof of attendance" required.

SPECIAL NEEDS

- ❑ Vegetarian
- ❑ Special Needs, i.e. hearing impaired, wheelchair access etc. (Please check here and a member of our Registration Staff will contact you to verify details)
- ❑ Food Allergies (Please specify): _____

METHOD OF PAYMENT

- ❑ Cheque (made payable to the CDHA) Post-dated cheques **will not** be accepted
- ❑ Money Order ❑ VISA ❑ MasterCard

Card # _____ Expiry Date: _____

Name of cardholder if different than registrant: _____ TOTAL: $ _____

HOTEL/TRAVEL INFORMATION

The CDHA has reserved room blocks at four different hotels for Conference participants. These rooms will be held until **MAY 1st, 2000** only. Hotel accommodation arrangements are the responsibility of the registrant. Please contact one of the following hotels:

1. Clarion Hotel Grand Pacific (250) 386-0450 or 1-800-663-7550
2. Chateau Victoria Hotel (250) 382-4221 or 1-800-663-5891
3. The Empress (250) 384-8111 or 1-800-441-1414
4. Executive House Hotel (250) 388-5111 or 1-800-663-7001

The CDHA has appointed Uniglobe Premiere Travel of Ottawa as its official travel agency. Please call Margaret Kennedy of the Convention Department at Uniglobe at 1-800-267-9372 to make your travel arrangements, or call the Conference's Official Carrier, Air Canada, directly at 1-800-268-0024. Please quote CV003554 to identify yourself as a participant of the CDHA Annual Conference.

ROOM RATES

Room rates will vary depending on the hotel chosen for accommodation. Please see enclosed Hotel Information Form.
All rates quoted are subject to applicable federal, provincial and municipal taxes.

ROOM RATES:

To qualify for the **Early Bird Discount**, return completed form by **MARCH 31st, 2000** to:

CDHA Conference
96 Centrepointe Drive
Nepean, Ontario
K2G 6B1

www.cdha.ca

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

FOR OFFICE USE
Date Received _____
Funds Received _____
Date Processed _____

Advance registration ends May 26th, 2000.

The First Nations and Inuit Regional Health Survey National Report 1999

Reprinted with permission from the First Nations and Inuit Regional Health Survey

Introduction

The first Nations and Inuit Regional Health Survey National Report 1999 was developed from the National Core data derived from the historical 1997 national health survey. This data represents the most current, validated health information on the First Nations in British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia and the Inuit Peoples of Labrador.

The CDHA has received permission to inform our members of information from the National Report, specifically the Health and Dental Services Section of the report.

For more information on the First Nations and the Inuit Regional Health Survey, please contact:

Ms. Gail McDonald, National Coordinator
Akwesansone Mohawk Territory
McDonald Road, St. Regis, Quebec
e-mail: gmcd_akw@glen-net.ca

Dental Care

It was mentioned at the outset of the report that one of the health services in which there was particular interest was that of dental care, and the next section (dental health) will report on some results on this topic from the First Nations and Inuit Regional Health Survey. The literature on dental services is not extensive and seems to deal primarily with dental problems and services in the more northern and remote regions.

The prevalence of dental problems historically has varied regionally and over time, depending on the diet and nutritional habits that Aboriginal people were accustomed to. Bjerregaard and Young (1998), for example, mention that dental caries among the Inuit around the turn of the last century were almost unknown due to the absence of sugar (as well as refined carbohydrates and fat) in the traditional diet. This changed in the latter half of the century. Rea et. al. (1993) write about the "epidemiologic transition":

"Surveys conducted in Alaska and Greenland in the early 1900s showed the Inuit, along with other aboriginal peoples living a traditional lifestyle, had excellent dental health — minimal caries, and little tooth loss even in old age. Studies conducted during the period when Southern, highly cariogenic foods were first becoming available in the North found marked differences within Inuit communities along dietary lines. In several studies, a marked age differential was apparent. Parents and grandparents, still eating a more traditional diet, had better teeth or a slower decline in oral health than children raised on store-bought foods. In the third phase, residents of communities such as those in Keewatin, where Southern foods have been available for some time and are widely used, have a uniformly poor level of oral health. Whether a fourth stage will appear, in which preventive measures in diet, oral hygiene, and dental care will reduce the burden of illness, remains to be seen. Reductions in the caries burden of children in Greenland may be an early indication of this." (Rea et. al., 1993:123)

The current situation is not good. The most systematic, national, study is that undertaken by the Department of Community Health at the University of Toronto (Leake, 1992). This is a study that examines the dental health of Aboriginal children aged 6 and 12 years. The results show that, while nearly 75 percent of the children surveyed had received dental care in the year preceding the survey, still 91 percent of them suffered from tooth decay. However, children who had access to fluoridated water supplies suffered less from tooth decay than those who did not. Approximately 25 percent of Aboriginal children regularly suffered from toothache or bleeding gums, and only half the children could be said to have healthy gums.

> *"The current situation is not good... The results show that, while nearly 75 percent of the children surveyed had received dental care in the year preceding the survey, still 91 percent of them suffered from tooth decay"*

This national survey was repeated in 1996 with similar results. To take just two indicators, in 1996, 89 percent of 12 year-olds and 95 percent of 6 year-olds had at least one decayed, missing or filled tooth. As in 1991, two-thirds of the children examined required urgent treatment, restoration work or extractions (Saskatchewan Indian Federated College, 1998).

For Inuit children in the North, Bjerregaard and Young (1998) draw from Leake (1992), and Zammit et. al. (1994) in coming to the following conclusions about dental problems affecting Aboriginal youth:

"A survey of the oral health of aboriginal children in Canada in 1990–91 shows that, in the North West Territories where the majority of the children surveyed are Inuit, 95 percent of children at ages 6 and 12 have at least one decayed, missing, or filled tooth. The mean DMFT score (the decayed-missing-filled-teeth index) is 8.2 and 8.7 in the two age groups. These figures are similar to those for other aboriginal children and are considerably higher than figures for southern Canada. In Ontario, which has the best dental health indicators, 48 percent of 13 year old children are caries-free and the mean DMFT is 1.7. Baby bottle tooth decay is a very prevalent condition. The investigators were surprised by the high caries levels in the most remote communities and by the low level of care evident, as well as by the high level of reported use of sugar-snacks… In Labrador, Inuit children and youth aged 5–22, only 3 percent were found to be caries free, and 88 percent of those with caries had untreated dental decay. The mean DFMT was 6.9…" (Bjerregaard and Young, 1998:96,97).

These and other studies, such as Rea et. al. (1993) who report on the Keewatin region, clearly establish the high level of need for dental services that exist, whether among children or adults. Indeed, speaking of adults, the Keewatin study concluded that:

"Sixty percent of adults needed at least one restorative procedure, 68 percent needed prophylaxis, and 45 percent needed periodontal treatment. Men required treatment of all types more than women. The results of this study confirm the clinical impression that dental disease is rampant among the Inuit population. There are major needs for both preventive and treatment services." (Rea et. al., 1993:117).

Bedford and Davey (1993) report that, as little as 25 years ago, there were hardly any formal dental delivery services available for remote locations. They say it was not uncommon for nurses or priests to extract teeth, or for children to be flown into larger centers such as Iqaluit (then Frobisher Bay) to have a decayed tooth extracted. A major change in the situation began in the early 1970s when the University of Toronto was contracted to develop and operate a national school of dental therapy, whose graduates went on to serve in remote locations (McDermott et. al., 1990). The University of Manitoba also stands out in its service to communities in northern Manitoba and the Keewatin region (Odlum, 1995).

Dental services are now provided under the Non-Insured Health Benefits Program of the Medical Services Branch of Health Canada. First Nations and Inuit clients of MSB can access private practitioners across the country, as well as resident dental therapists in more remote locations. Blue Cross provides payment services to the private practitioners, under contract with MSB, and the national claims processing service is now able to capture national data and individual client histories and provider profiles for the first time. Annual negotiations take place between MSB and provincial dental associations to establish appropriate fee schedules (Bedford and Davey, 1993).

The federal government reports that expenditures for dental services increased steadily in the 1990s, at least up until 1996, when some limits were placed on the frequency of certain dental services (Canada, 1997). While there is some regional variation, the rate of use of dental services (that is, the number of beneficiaries having received at least one dental service during a given period, as a percentage of the eligible clientele) stood at 38 percent in 1996–97. Restorative work such as crown and fillings cost more than $34 million that year and was the most costly form of dental care. Next came orthodontic services such as braces, followed by preventive work such as scaling or polishing, and diagnostic services (Canada 1997).

Dental Health

This section presents results from the questions on dental health that inquired about the last time treatment was received, whether the respondent needed dental treatment at the time of the survey and if so, what kind of treatment, and whether he/she had experienced any dental problems or pain in the past month. In presenting the data for these questions, we again use the population-weighted results.

Figure 17 reveals that females were much more likely to have received dental care in the past year than males. Of course this could mean either that they have had more dental problems or that they have been more diligent in seeking out the services of professionals in the dental field. Rea et. al. (1993), referring to women in the Keewatin region, suggests that both are true:

"We speculate that this gender difference relates to the fact that children are usually brought for dental treatment by their mothers, who can thus access treatment for themselves more easily than men

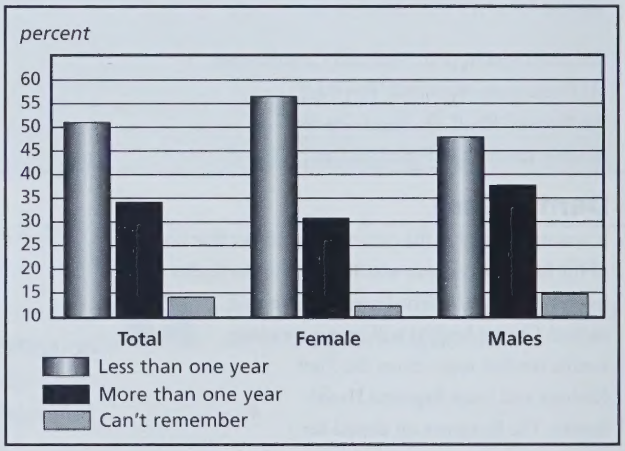


Figure 17 — Last Time Received Dental Care by Gender %

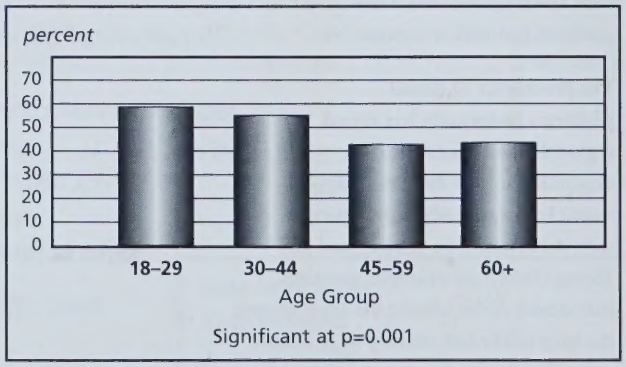


Figure 18 — Received Dental Care in Past Year by Age Group %

can. It is worth emphasizing that despite their apparently greater access to dental treatment, women still have evidence of a greater total burden of dental disease. In isolation from preventive services, treatment alone has been insufficient to control ongoing dental decay" (Rea et. al., 1993:124). Our results tend to support this interpretation, as Figures 17 and 25 indicate.

When the results for the same question are analyzed by age group, the pattern that emerges is that those in the younger age categories are more likely to have received dental care in the past year. As with women, younger adults may now be in the habit of seeking dental care on a regular basis. But it may be that they need it more because of their poorer dental health status.

In Figure 19, we see that females are slightly less likely than males to have needed treatment at the time of the survey although the difference is not large.

When it comes to the need for dental treatment by different age groups, we see from Figure 20 that the need for dental treatment is fairly high for the younger adult age groupings, but the need falls off markedly for the older age categories. It is possible that the latter include a higher proportion of persons who have enjoyed a traditional lifestyle such as living off the land and thereby have better dental health. It may also be the case that dentures have addressed dental problems that occurred in earlier years.

Figure 21 shows that the need for dental treatment at the time of the survey is directly related to the level of education of the respondent. While the relationship is not perfectly linear, there is a tendency for those with higher levels of education to be more in need of dental treatment. Some of the same factors that were discussed with regard to the age variable may be operative here as well, in the sense that those with little education are likely to be older. This with higher education levels may also be more aware of the need for dental care.

Figure 22 shows a relationship between need for dental treatment and language use, with those who speak Aboriginal languages less likely to need dental treatment than English or French speakers. It may be that those who speak Aboriginal languages actually have better access to dental services or are less in need of them.

Other variables, such as degree of community isolation, the size of the community, and health transfer status do not appear to be strongly related to the need for dental treatment.

Those who needed dental treatment were asked to specify the kind of dental care that was required. The results are shown in Figure 23, which reveals that the most common treatment required was restorative work such as fillings. This was followed by maintenance work (check-ups or teeth cleaning), prosthesis work (i.e., dentures), and tooth extractions. Relatively few persons mentioned periodontal (gum) work.

Figure 24 shows that, among those who reported at least one problem in need of fixing, the vast majority specified only one problem. There was, however, a sizeable group that had more than one condition needing treatment.

The final question in the dental series asked respondents whether they experienced any dental problems or pain in the last month.

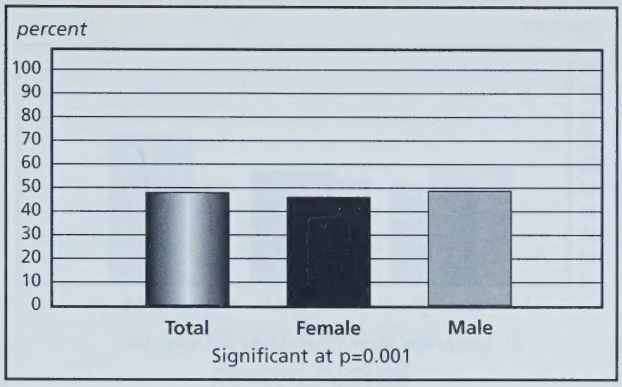


Figure 19 — Need Dental Treatment at This Time by Gender %

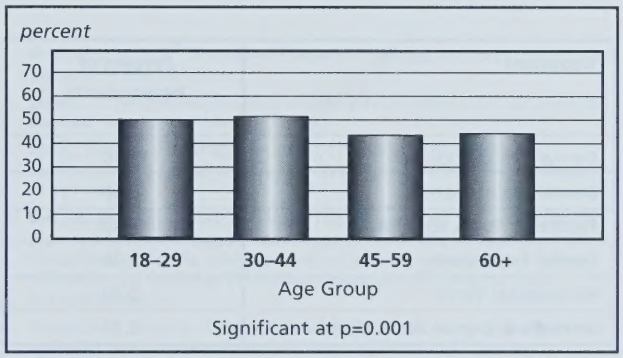


Figure 20 — Need Dental Treatment at This Time by Age Group %

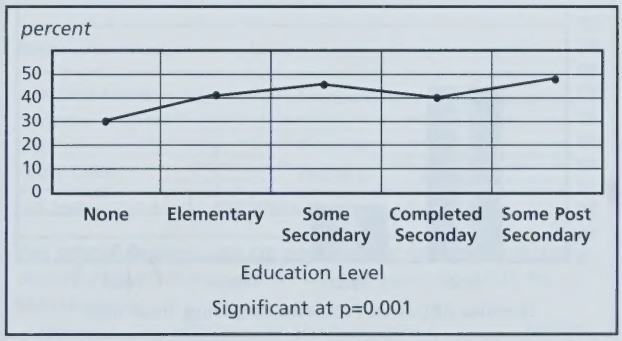


Figure 21 — Need Dental Treatment at This Time by Educational Level %

Figure 25 shows that the answer was in the affirmative for 22 percent of the cases, with females somewhat higher than males.

The sub-group differences on this question, however, are not strong and indeed little relationship is found by background variables such as level of education, language use or community isolation. There are small differences by community size, however, with persons in larger communities more likely to report dental problems or pain in the past month (Figure 26).

A modest relationship is also found with the transfer status of the community, as the final chart in our report reveals (Figure 27). This chart is again subject to the varying interpretations of the transfer process already discussed with respect to Figure 12 above.

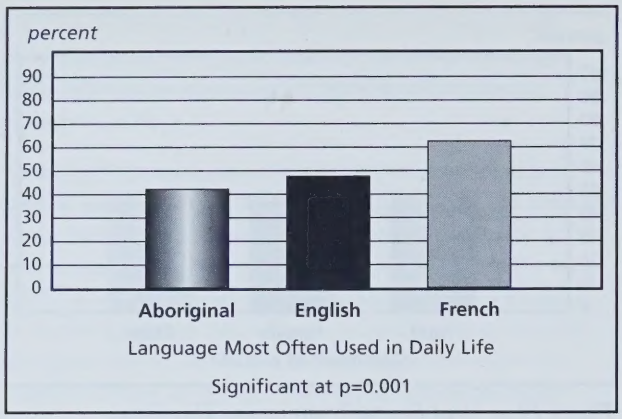


Figure 22 — Need Dental Treatment at This Time by Language Use %

Treatment	Percent of Respondents
Dental Restoration	15.40
Dental Maintenance	8.50
Prosthetic Work (Dentures)	5.40
Dental Extractions	5.20
Periodontal Work	0.40
Immediate Dental Work (Pain)	0.20

Figure 23 — Type of Dental Treatment Needed

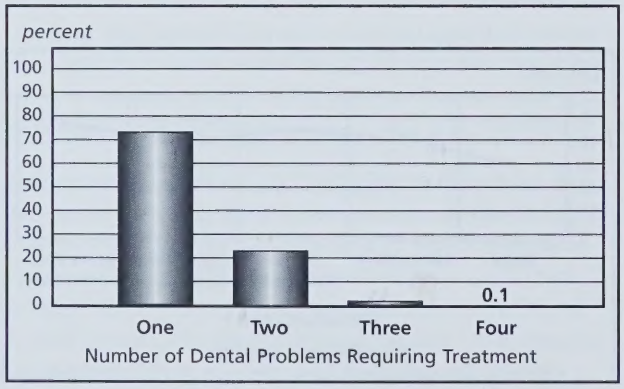


Figure 24 — Number of Dental Problems Requiring Treatment %

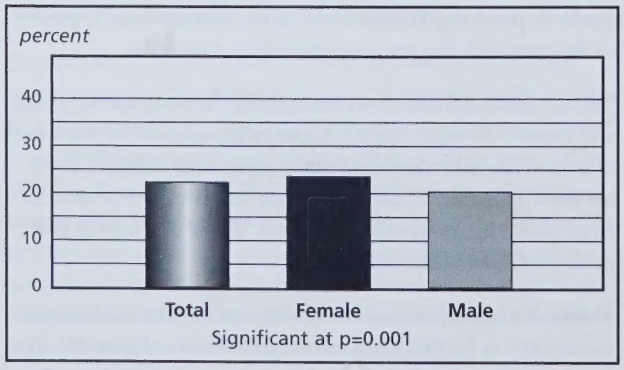


Figure 25 — Dental Problems or Pain in Past Month by Gender %

Conclusion

Health services for Aboriginal people in Canada are clearly in transition in a number of respects. Perhaps the most fundamental transition concerns who provides the services and the manner in which they are provided. Within the broader context of self-determination and self-government, there is the very real prospect that Aboriginal governments and their agencies will once again have the primary responsibility for the design and delivery of health services to their own populations even though some utilization of mainstream services will no doubt continue.

In comparison with the situation even a century ago, it must be concluded from the evidence that the availability and quality of health services for Aboriginal people has improved greatly. Our literature review and data indicate, however, that there are still significant problems. Indeed, according to the FNIRHS, almost 60 percent of the Aboriginal population believe that health services are still not equal to those that are offered to Canadians generally. We also learned from the survey that those who are likely to have had the most experience with available health services (that is, those who judge themselves to have less than excellent health) are the people who are most likely to believe that health services are unequal. They are also most likely to feel that particular health services are in need of improvement.

The survey has also helped us to identify some of the specific areas that are in need of improvement. Pediatric services head the list, followed by improved awareness concerning disease prevention, medication, and diabetes. Other items cited by more than 80 percent of those who felt that health services were unequal included homes for the elderly, home care, and mental health services.

The effects of changes in Aboriginal life style in recent decades are evident in the many so-called "modern" health problems that now afflict Aboriginal people, including chronic conditions such as diabetes and heart disease, and cancer. Health services need to catch up with this transition. This is perhaps most clearly evident in the case of dental health, an area where problems have rapidly escalated due to the change in diet that people have undergone. Certainly the data presented in this report demonstrate the extent of the problem and the urgency of coming to grips with it.

The survey results also suggest that there is interest and support for further developing the preventive aspect of health services. This message came through when people were asked what services were in need of improvement, as we noted above. Preventive strategies are also the logical direction to be taken in addressing the dental health problems that have been documented in this paper. The means exist to greatly reduce or eliminate the problem of dental decay and dental disease. Clinical prevention measures such as oral screening, treatment services, the fluoridation of water supplies (or in some situations, giving persons fluoride supplements directly), and community education and other programs that would lead to behavioural and lifestyle changes (such as diet and personal oral health activities) are important. These are the kinds of measures that will greatly reduce the dental health problems that Aboriginal people currently face.

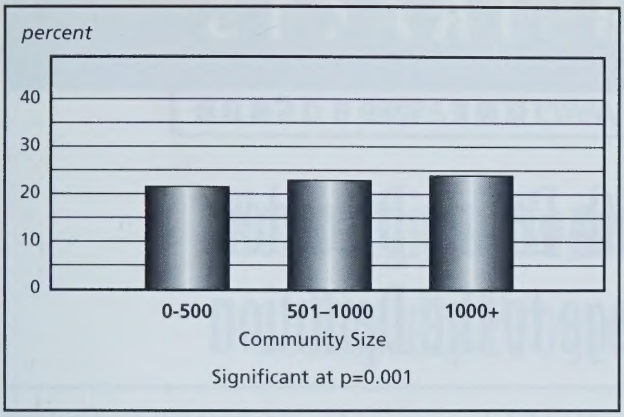


Figure 26 — Dental Problems or Pain in Past Month by Community Size %

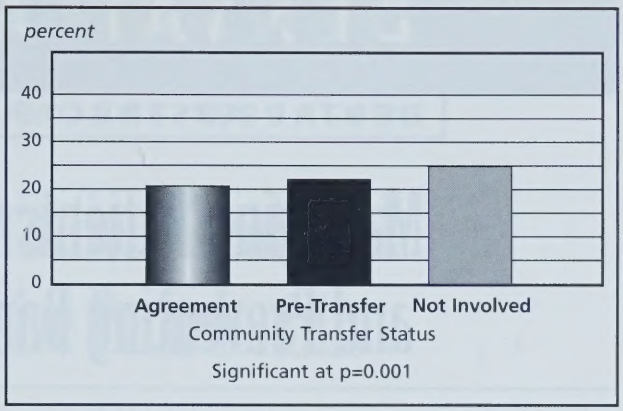
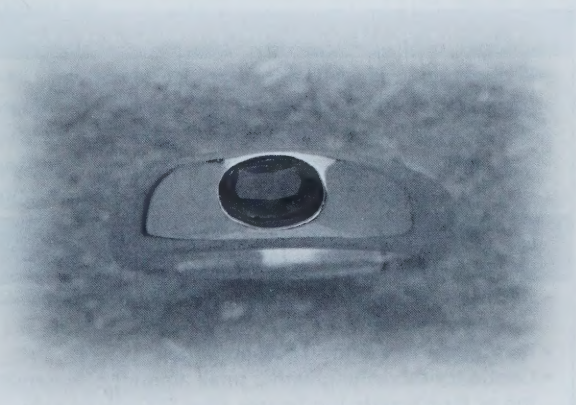


Figure 27 — Dental Problems or Pain in Past Month by Community Transfer Status %

References

1. Bedford, W.R. & Davey, K.W. (1993) Indian and Inuit dental care in Canada: The past, the present and the future. *Journal of the Canadian Dental Association*, 59, 126-132.
2. Bjerregaard, P. & Young, T. (1998) The Circumpolar Inuit: health of population in transition. Copenhagen, Denmark: Munksgaard.
3. Canada (1997) Non-Insured Health Benefits Program: Annual Report 1996–1997. Medical Services Branch, Non-Insured Health Benefits Directorate, Program Analysis Division, Health Canada, Ottawa.
4. Leake, J.L. (1992) Report on the Oral Health Survey of Canada's Aboriginal Children Aged Six and Twelve. Toronto: Department of Community Dentistry, University of Toronto.
5. McDermott, P.T., Mayhall, J.T., and Leake, J.L. (1991) Dental therapists and the delivery of dental care in Canada's Northwest Territories. Circumpolar Health 1990: Proceedings of the 8th International Congress on Circumpolar Health. (Pp.668–671). University of Manitoba Press.
6. Odlum, O. (1995) Meeting the needs of under-services communities: one university's externship experiment. *Probe*, 29, 175–177.
7. Rea, E., Thompson, G., Moffatt, M., Young, T., O'Neil, J., & Tate., R. (1993) Factors associated with Edentulousness in Keewatin Inuit. *Arctic Medical Journal*, 53, 757–760.
8. Saskatchewan Indian Federated College, (1998) Report on the 1996-97 Oral Health Survey of Canada's Aboriginal Children Aged Six and Twelve. National School of Dental Therapy, with the collaboration of the University of Saskatchewan College of Dentistry and the College of Medicine, Department of Community Health and Epidemiology.
9. Zammit, M.P., Torres, A., Johnsen, D.C., et. al., (1994) The prevalence and patterns of dental caries in Labrador Inuit youth, *Journal of Public Health Dentistry* 54: 132–138.

a CIRCLE of Dental Hygiene



THE CANADIAN DENTAL HYGIENISTS ASSOCIATION

L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

Please print clearly Date _____

Customer Name _____
Customer Address _____
City _____ Province _____
Postal Code _____ Phone ( ) _____
10K Yellow Gold ☐ 10K White Gold ☐ Finger Size _____

Two payment options: You can pay in full for ring when ordering, or send a $50.00 deposit and we will ship your ring C.O.D. for balance owing.

Hygienists ring with genuine amethyst stone	165.00
Shipping costs	10.00
Sub Total	175.00
G.S.T.	12.25
Ontario Provincial Tax (if you are an Ontario resident) (8%)	_____
Total	_____
Less Deposit	_____
C.O.D. Balance Due	☐

Visa and Mastercard accepted. Please insert card number with expiry date and sign. We will ship Priority Post.

Mastercard # _____
Visa # _____
Expiration Date _____
Signature _____

Please allow five to six weeks for delivery. Please mail order to:

ArtCraft CDHA Dental Hygiene Ring
P.O. Box 238, Carleton Place
Ontario, Canada K7C 3P4

Tel: (613) 253-0412 Fax: (613) 253-0407

DENTAL ABSTRACTS MAY/JUNE 1999 ISSUE

Managing Patients with Eating Disorders and Preventing Damage to the Dentition

Dental Abstracts is a new section of the Probe Journal highlighting a partnership with CDHA and the Journal of Dental Abstracts. All articles are printed with permission of Dental Abstracts. For more information and subscription rates, contact (314) 453–4351 or visit www.mosby.com/periodicals

Introduction

The typical dentist is likely to have patients with eating disorders. The manifestations of common eating disorders are reviewed, along with the steps a dentist can take to minimize harm to the patient's oral health.

Eating Disorders

A person with anorexia nervosa may either restrict food intake or follow binge eating with purging methods, resulting in a body weight 15% or more below the ideal. Bulimia is more common and involves overeating followed by various compensatory methods; bulimics are within 10% of their ideal weight or are overweight. Many medical conditions can result from either eating disorder, including problems of the cardiovascular, central nervous, endocrine, gastrointestinal, hepatic, musculoskeletal, and renal systems as well as the skin and hair. In anorexia, the mortality rate is 4% to 20%.

ORAL MANIFESTATIONS

Erosion of the upper palatal tooth surfaces may result from self-induced vomiting (SIV). With regular SIV for 5 years or more, the facial surfaces of teeth may also show erosion. The effect of eating disorders on caries, oral microflora, and periodontal disease is unclear. Episodic enlargement of the parotid glands has been noted in bulimics. Nutritional deficiencies can result in angular cheilitis, candidiasis, glossitis, and oral mucosal ulceration.

DENTAL MANAGEMENT

When a dentist suspects SIV as the cause of dental erosion, it is important to remain sympathetic and nonjudgmental. There is no consensus on whether eroded surfaces may be restored before SIV is controlled; if SIV continues, it may continue to erode the tooth substance around the restorations. Composite restorative materials are preferred over glass ionomers, which are acid-soluble. Porcelain or metal veneers, metal onlays, "double veneers," and resin-bonded crowns have also been used to restore eroded surfaces.

Study casts and photographs offer means of monitoring progressive tooth wear, which allows the dentist to demonstrate the relationship between erosion and SIV. This evidence, along with pain, sensitivity, and impaired dental esthetics, may motivate the patient to reduce the frequency of SIV. While some authors have advised against toothbrushing after vomiting because of the risk of toothbrush abrasion on softened enamel, others have found no increased wear. Dentists can provide eating-disordered patients with recommendations (Table 3) to lessen the severity of erosion.

Dentists should also consult with the patients' physician. Antidepressants prescribed for bulimia may influence salivary flow. By learning about the patient's progress in behavioural therapy, the dentist is better able to plan dental treatment steps.

CLINICAL SIGNIFICANCE

Common eating disorders are associated with dental erosion. This article provides information about the manifestations and management of erosion related to eating disorders.

Milosevic A: Eating disorders and the dentist. *Br Dent J* 186:109–113, 1999

Reprints available from A Milosevic, Dept of Clinical Dental Sciences, Univ of Liverpool, Liverpool L69 3BX, UK

Table 3

RECOMMENDATIONS TO MINIMIZE DENTAL PROBLEMS IN EATING DISORDERS

Raise awareness of sources of acid in the diet, thus:
• Reduce intake of acidic drinks, drink alternatives (low-calorie beverages are usually consumed but they still have erosive potential) • Reduce consumption of fresh fruit, especially citrus fruit • Alcohol in various guises, e.g., white wine, cider, alcopops
Post-vomiting methods of increasing pH and improving oral milieu:
• After self-induced vomiting (SIV), chew gum, rinse mouth with water or milk • Rinsing with an antacid preparation • Gentle toothbrushing with a small amount of desensitizing or bicarbonate toothpaste after SIV may be safe
Check that any medication does not provoke dry mouth or nausea
For salivary hypofunction/dry mouth: • Prescribe neutral artificial saliva or sialogogue pastilles

(Courtesy of Milosevic A: Eating disorders and the dentist. *Br Dent J* 186:109–113, 1999)

Nonsurgical, Nonextraction Treatment of Rapidly Progressive Periodontitis

Introduction

Rapidly progressive early-onset periodontitis is associated with an accelerated rate of bone and attachment loss. In the case report presented here, a patient with rapidly progressive periodontitis (RPP) was successfully managed with antibiotic and mechanical therapy.

DIAGNOSIS

A 30 year-old man presented with gingival bleeding, plaque and calculus accumulation, and gingival recession around the first molars and mandibular incisors. His oral hygiene was poor. Probing depths of 3 to 15 mm were noted, along with attachment loss, some anterior crowding, and several class 3 furcation defects. Severe bone loss was seen on radiographs. The mandibular third molars were affected by pericoronitis. Based on the findings, RPP was diagnosed. Microbiologic testing revealed elevated proportions of *Actinobacillus actinomycetemcomitans, Prevotella intermedia, Fusobacterium species, Campylobacter rectus, Porphyromonas gingivalis,* and *Peptostreptococcus micros.*

TREATMENT

The patient underwent scaling and root planing over four visits. An 8-day course of metronidazole, 250 mg three times a day, and amoxicillin, 500 mg four times a day, was prescribed. The molars involved with pericoronitis were extracted. The patient returned monthly for scaling and re-examination. Bacterial levels were monitored periodically.

FOLLOW-UP

P. intermedia levels remained elevated above normal, but were reduced significantly from pretreatment levels. All other periodontal pathogens were eliminated or suppressed to normal levels. A second course of antibiotics was prescribed. Eight months after presentation, some gain in bone height was observed, and tooth mobility had remained stable or decreased. Occlusal adjustment was performed to decrease occlusal trauma. Three months later, microbiologic testing showed bacterial levels within the normal range, and improvements in probing depths and clinical attachment were seen. Most sites had probing depths of 2 to 4 mm. Orthodontic treatment was used to improve access for oral hygiene after the periodontal infection was controlled.

Discussion

Because of the advanced degree of periodontal destruction at presentation, microbiologic testing was used to identify pathogens. In such cases of RPP, the conventional treatment plan would involve extraction of hopeless teeth, scaling and root planing, occlusal adjustment, and periodontal surgery. In this case, however, extraction would have compromised arch integrity, and the patient could ill afford complex restorative treatment. Moreover, it would have been hard to determine which teeth had the best chance of survival, given the extent of tissue destruction. As this case shows, it may take more than 6 months after periodontal infection is controlled before clinical stability emerges. Performing surgery too soon might result in less attachment gain and more tooth loss.

CLINICAL SIGNIFICANCE

Effective control of infection — by means of antibiotic and mechanical therapy — in cases of rapidly progressive periodontitis may allow the periodontium to heal without surgical intervention. The healing process may be more prolonged and slower than commonly believed. Microbiologic testing can facilitate treatment and monitoring.

Worch KP, Listgarten MA: Treatment considerations in rapidly progressive periodontitis: A case report. *Compend Contin Educ Dent* 19:1203–1216, 1998

Reprints not available.

Preventive Maintenance of the Soft Tissues Around Implants

Introduction

To ensure long-term success of implant treatment, the clinician must be well-versed in the relationship between implants and peri-implant tissues, preventive protocols, and useful methods of plaque control and débridement.

TISSUE INTERFACE

The soft tissue surrounding an implant differs from that surrounding natural teeth. Connective tissue around an implant is adherent, and collagen fibers run parallel to the implant surface. With natural teeth, on the other hand, connective tissue fibers insert into cementum. There is no periodontal ligament or cementum around an implant.

TISSUE PROBLEMS

Plaque-induced inflammation around an implant is termed "peri-implant disease." "Peri-implant mucositis" describes inflammation limited to the soft tissue. "Peri-implantitis" refers to peri-implant bone loss secondary to inflammation.

Table 2.

PATIENT PLAQUE CONTROL PROCEDURES

Chemotherapeutic
Chlorhexidine • Rinse • Site-specific application Cotton/sponge-tip applicator
Mechanical
Faciolingual • Toothbrush Manual Power
Proximal
• Interdental brush • Floss • G-Floss (3i Implant Innovations Inc.) • Proxi-Floss (Advanced Implant Technologies)
Circumferential
• Power brush: Rotodent (Professional Dental Technologies) • Perio-aid (Marquis Dental Mfg.) • Post Care (John O. Butler Co.)

(Reprinted with permission from The Compendium of Continuing Education in Dentistry. Authors: Eskow RN, Smith VS: Preventive periimplant protocol. *Compend Contin Educ Dent* 20:137–152, 1999. Please do not reprint for any other purpose without written permission from the publisher.)

Table 4.

DÉBRIDEMENT IMPLEMENTS FOR ABUTMENT SURFACES

For Removal of Soft Accretions
1. Toothbrush
2. End-tufted brush
3. Interdental brush
4. Perio-aid (Marquis Dental Mfg.)
5. Post Care (John O. Butler Co.)
6. Proxi-Floss (Advanced Implant Technologies)
7. Floss/SuperFloss (Oral-B Laboratories)
8. G-Floss (3i Implant Innovations Inc.)
9. Rubber cup/point
10. Nonabrasive prophy pastes • Flour of pumice • Tin oxide • Ora Ti (Life Core Biomedical) • Abutment Glo (3i Implant Innovations Inc.) • Implantcleanic (Premier Dental)
For Removal of Hard Accretions
1. Post care (John O. Butler Co.)
2. Densonic Soft Tip (Dentsply/Equipment Division)
3. Premier Implant Scaler (Premier Dental)
4. 3i Rigid Plastic Implant Scaler (3i Implant Innovations Inc.)
5. Steri-Oss Scaler for Dental Implants (Steri-Oss)
6. Nobel Biocare Plastic Scaler (Nobel Biocare)
7. Implant Prophy + (Advanced Implant Technologies)
8. Implacare (Hu-Freidy)
9. Implarette (3i Implant Innovations Inc.)

(Reprinted with permission from The Compendium of Continuing Education in Dentistry. Authors: Eskow RN, Smith VS: Preventive periimplant protocol. *Compend Contin Educ Dent* 20:137–152, 1999. Please do not reprint for any other purpose without written permission from the publisher.)

PREVENTION

Because periodontal pathogens harboured by natural teeth can serve as a reservoir for peri-implant colonization, preexisting periodontal disease must be eliminated before implant placement. Following implant exposure, the patient must maintain excellent oral hygiene. Plaque control involves rinsing with chlorhexidine and using a variety of mechanical aids (Table 2). It is important for the patient to clean the peri-implant crevice that forms around the healing abutment, using appropriate toothbrushes and interdental brushes. For single-tooth restorations, a toothbrush and dental floss may suffice; patients who are unable to manipulate floss can use alternative proximal or circumferential cleaning devices. A rotary power toothbrush may be helpful in some situations. Patients with overdentures should clean the prosthesis with a denture brush in addition to cleaning the intraoral retainers; tools helpful for intraoral cleaning include an end-tufted brush or the Post Care flossing cord (John O. Butler Co.).

ASSESSMENT

The dentist and dental hygienist work with the patient to maintain peri-implant soft-tissue health. During the assessment phase, the clinician should check for signs of peri-implant mucositis or peri-implantitis; determine whether the tissue is keratinized; and palpate the soft tissue to detect any bleeding or suppuration (probing of the peri-implant crevice is not diagnostic and may be harmful). When the clinical or radiographic examination reveals signs of disease, however, a plastic probe may be used, and implant mobility should be evaluated. Radiographs should be periapical or bitewing films taken with a paralleling technique.

HYGIENE

Plaque control or polishing is used to remove soft debris, and special hand instruments or sonic tips are used to remove hard accretions (Table 4). Metal instruments will alter the titanium implant's surface and should not be used. Plastic instruments resembling scalers and curettes should be used only on abutment surfaces. Instrumentation below the tissue margin should be minimized if no calculus is found there. Nonabrasive polishing agents (Table 4) should be used with rubber cups or points to polish the restoration and visible parts of abutments. Further preventive visits are scheduled at an interval appropriate for the patient's situation. More frequent recall visits are indicated for patients with poor plaque control, impaired soft-tissue health, some natural teeth present, prior periodontal disease, or use of medications that influence the mucosa and salivary flow.

CLINICAL SIGNIFICANCE

After implants are exposed and restored, patients and clinicians must work together to maintain good health in peri-implant soft tissues. Many special plaque- and calculus-removal tools have been designed for use around implants.

Eskow RN, Smith VS: Preventive periimplant protocol. *Compend Contin Educ Dent* 20:137–152, 1999

Reprints not available.

NEW PRODUCTS

DentalMan™ International

DentalMan International A/S is pleased to announce the launch of our entire product line.

The DentalMan product line consists of two combinable applications, the DentalMan Cordless Equipment — a range of battery driven prophylactic instruments, and the DentalMan Compact Unit — a multi-feature dental unit at the cutting edge of development in comparison to existing products. Both unique products are now available.

The DentalMan product line is the world's smallest dental equipment, operated by rechargeable batteries. It can be powered either by mains power, solar energy or by a car lighter plug.

The system's modular design requires little service or maintenance.

For further information please contact our sales department at **Tel.: +45 70 20 00 96.** You can also contact us via our website **www.dentalman.com** or directly via our e-mail: **info@dentalman.com**.

DentalMan™ Cordless Overview

DentalMan Cordless is the new era of battery-driven, dental instruments. DentalMan Cordless Equipment offers dentists, hygienists and technicians new levels of flexibility in dental work.

DentalMan Cordless Instruments are the first and only solution to give you true mobility and flexibility — whether it is in the office or on-site prophylactic and technician dental care to the elderly, to mobility-impaired patients or to children. With DentalMan, it is even possible to use your own contra-angle hand piece.

Being cordless, the instruments are excellent primarily for prophylactic (preventive) work. Batteries are rechargeable. The power source can be a mains supply, solar panel or a car lighter plug.

The batteries can operate a DentalMan Micro Motor, which can power either a contra-angled hand piece or a straight hand piece both based on the Intra-system standard.

In addition to micro motors and hand pieces, the batteries can also be connected to other electrical instruments, e.g. DentalMan's Mirror Light Straight Handpiece and Light Curing Lamp.

As the instruments are cordless, they are also suitable for use in the dental office for and in the event of any failure of the units existing equipment, DentalMan can act as a backup for certain types of treatment.

3M Introduces 3M™ Professional Tooth Whitening System

Whitening System makes process easy for Dental Professionals and Patients

The 3M™ Zaris™ professional tooth whitening system, an easy-to-use system that features a 3M patented technology that provides excellent whitening results, is now available in Canada from 3M Dental Products. This new whitening system also includes education materials for both staff and patients.

Based upon the input of dental professionals, 3M created a unique peel-and-stick gel retention inert which replaces time-consuming block-out resin.

The design also assists in faster and easier tray fabrication compared to making traditional trays.

Flexible treatment choices help ensure patient compliance. The gel can be applied during the daytime, at night, or through a combination of daytime and nighttime wear.

The whitening gel is available in 10 percent and 16 percent carbamide peroxide concentrations in syringes that are clearly marked for easy and accurate dispensing.

Along with the 3M Zaris professional tooth whitening system, each introductory kit includes education materials to promote whitening in the dental practice. All education materials are available in both English and French.

For more information, please contact **Beth Hanson, Market Supervisor, Dental Products, 3M Canada Company, PO Box 5757, London, Ontario, N6A 4T1**, phone **1–800–265–1840**, extension **6229** or **1–800–3M–Helps**, or visit our website at **www.3M.com.**

Sonicare® Introduces World's First Sonic Toothbrush

The world's first sonic toothbrush for home use — the Sonicare®, is now widely available in Canada, and comes with a guarantee of a better dental check-up after just 90 days of use or your money back.

The Sonicare sonic toothbrush, developed by Optiva Corporation, has evolved from the high-speed dental cleaning devices.

This is an exciting development in oral care in Canada. Sonic technology in a toothbrush for home use should go a long way to battling gum disease.

Two sonicare models are now available in Canada at a major drug store and department stores. The sonicare personal Model, with a suggested retail price of $149.00, comes with a single handle, brush head and base. The Sonicare Plus™ model, with a suggested retail price of $189.00, comes with two brush heads, a charger base, a non-slip grip and more advanced features.

To help new users become accustomed to power toothbrushing, Sonicare's Easy-Start™ feature automatically increases brushing power in small, gentle steps over the first 12 brushings. After the 12th brushing, the Easy-Start™ feature automatically shuts off and the user then operates sonicare at its optimal brushing power.

For more information, please contact:

Maureen Juniper
Juniper Communications
(905) 337–2733

Canada Hosts Global Conference on Ageing

Preamble

The world is facing unprecedented demographic change. In the next 30 years, the world's population of older persons is expected to triple, with much of this increase taking place in developing countries. All societies are enriched by their older people and demographic change will increase the potential for even greater benefits.

Ageing is a natural process of life. Older persons are a valuable resource. They are the repositories of tradition, culture, knowledge and skills. These attributes are essential in maintaining intergenerational links.

The vast majority of elder persons make vita contributions to their societies, families and communities as workers, caregivers, volunteers, mentors and as active citizens.

From **September 6th–9th, 1999**, Canada hosted the **International Federation on Ageing's (IFA) 4th Global Conference on Ageing** in Montreal. The event attracted over 1,400 paid delegates, plus more than 300 presenters and 100 exhibitors. Seventy-eight countries were in attendance.

Delegates at the conference worked hard to prepare a Montreal Declaration. It was officially presented to Dr. Sasha Sidorenko of the United Nations at the final session.

There is an increase in inequalities between developing and developed countries, between rural and urban environments and within individual countries. The United Nations and its member states need to develop strategies with realistic goals and measurable objectives so as to ensure that the world's population ages well and that older persons' needs for a secure and productive future are met.

As we assemble in Montreal in September 1999 at the Fourth Global conference of the International Federation on Ageing, we note with concern that the 1991 UN Principles for Older Persons are still not universally recognized nor adhered to; neither has the 1982 Vienna International Plan of Action been fully implemented.

Therefore, we, the older people throughout the world, our families and colleagues, universally call upon the United Nations and its agencies to work with national governments, non-governmental organizations, the corporate, private and voluntary sectors, in addressing the following urgent issues.

ISSUES

Many older persons throughout the world lack access to the essentials of life as the result of discrimination on the basis of age, disability, ethnicity, race, gender or religion, or because of employment practices and legislative barriers.

Women, as the majority of the ageing population, suffer disproportionately from poverty, poor health and isolation.

Older persons with disabilities face cultural and socio-economic barriers which impact on their quality of life.

Developing countries face the most rapid rate of population ageing and the greatest economic difficulties, but lack the necessary financial, social and health infrastructures to address these issues.

The devastating effects of conflict and illnesses such as AIDS have drastically altered the population structure of some countries, exposing older persons to greater vulnerability.

Changes in family patterns, structures and life styles can have a detrimental impact on older persons.

PRINCIPLES

We affirm the 1982 Vienna International Action Plan on Ageing, then the 1990 IFA Declaration of Rights and Responsibilities of Older Persons, and the 1991 UN Principles for the Elderly.

Older persons have the right to self-determination and fulfillment, dignity and respect, personal security, freedom of speech, association, and religious expression.

Older persons have the right of access to work, income, health care and shelter.

The responsibility of older persons include contributing to the realization of these rights by participating in the political processes of their community in accordance with UN democratic principles.

The empowerment of older persons necessitates their recognition as full participants and equal citizens in society.

RECOMMENDATIONS

We, the older persons of the world:

- call upon the United Nations General Assembly in this era of rapid ageing of the world's population to declare a Decade of Older Persons;
- call upon the United Nations to strongly urge each member state to adopt a National Plan on Ageing (as suggested in the UN National Targets on Ageing) that must include older persons in its development and strategies for implementation. National Plans should pay special attention to issues of gender, ethnicity, and diversity;
- call upon the United Nations to convene a World Assembly on Ageing in five years to review the progress achieved by individual member states in the adoption and implementation of their National Plan on Ageing;
- call upon the United Nations to assure that ageing concerns be systematically incorporated into the agendas, products and research of all relevant United Nations commissions, committees, consultations, plans of action, and programmes; and that issues of ageing be a major component in the development agenda;

- call upon the United Nations to expand the human and financial resources for the UN Programme on Ageing and for other UN agencies whose programmes impact on ageing.

RECOMMEND TO THE UNITED NATIONS THAT ALL NATIONAL PLANS ON AGEING:

- Assure the universal access of older persons to economic security, food, health care, shelter, clothing and transportation.
- Assure the full participation of older persons in the social, cultural and political life of their communities.
- Assure that the dignity and quality of care for older persons are established, maintained and safeguarded, and that older persons are free from exploitation and mental and physical abuse.
- Assure that employment barriers for older persons are eliminated by the provision of training and work opportunities and appropriate work conditions.
- Strengthen the capacity of the family and community to provide basic care and support for older persons.
- Strengthen opportunities for intergenerational dialogue, exchanges, collaboration and mentoring.
- Incorporate Universal Design principles to assure older persons access to all environments.
- Strengthen the ability of the public, private, voluntary, and non-governmental sectors to work together for the benefit of older persons.

Y2K UPCOMING EVENTS CALENDAR

FEBRUARY • MARCH • APRIL

February 26th 9:00 a.m. – 1:00 p.m.
Fluoride:Oral and Systemic Effects
Presenter: Dr. Hardy Limeback, D.D.S.,
University of Toronto Professor

Mohawk College, Fennell Campus, Hamilton

Contact: Jenny Firan, RDH
Phone (905) 627–7212
Fax (905) 627–8569

March 25th 9:00 a.m. – 1:00 p.m.
Ultrasonics: How Do They Compare
Presenter: Lisa Mapplebeck, R.D.H.,
George Brown Clinical Instructor

Holdiay Inn, Burlington

Contact: Jenny Firan, RDH
Phone (905) 627–7212
Fax (905) 627–8569

April 8th
Boomers to Tumours: Your Growing Geriatric Practice
Antimicrobial Management of Odontogenic Infections
Presenter: Dr. Trey Petty, DDS, FAGO, FADI

Sponsored by: Kootenay Dental Hygiene Society
Prestige Lakeside Resort — Nelson BC
Contact Name: Nancy Matheson (250) 352–5614

April 28th – 29th
Alberta Dental Hygienists Association Conference —
Calgary AB

Contact: Phone (780) 465-1756
Fax (780) 440-0544

MAY • JUNE

May 28th – 30th
Charting the Course for Literacy and Health in the New Millennium —
CPHA Ottawa ON
Contact: Web www.nlhp.cpha.ca

June 8th – 11th
Europerio 3
European Federation of Periodontology and
Swiss Association for Dental Hygienists
Geneva, Switzerland
Contact: Fax +4122 339 96 214
Web www.efp.net

June 9th – 11th
CDHA Annual Professional Conference —
Partnerships in Health:
Broadening our Professional Horizons
Victoria BC
Contact: CDHA

June 21st – 28th
American Dental Hygienists Association Conference —
Dare to Sway
Washington DC
Contact: Phone (312) 440–8900
Fax (312) 440-8929

JUNE 9TH–11TH, 2000

11TH ANNUAL CDHA
PROFESSIONAL
Conference
THE VICTORIA CONFERENCE CENTRE
VICTORIA, B.C.
JUNE 9TH–11TH, 2000

CLINICAL EDUCATOR

DENTSPLY Canada Ltd., is seeking motivated and enthusiastic individuals for Clinical Educators in these three regions: Quebec, Western Canada and Ontario.

The primary role of the position is to provide educational programs to dental professionals including dentists, hygienists, assistants and students. There is also a possibility of international level.

The selected candidate must be a registered dental hygienist with a bachelor's degree and a minimum of 5 years experience in clinical hygiene. Restorative background is a definite asset. Effective verbal/written communication skills, adaptability, attention to detail, self-motivation and exceptional organizational ability are also required. Previous teaching and a corporate training skills are desired.

As a Division of DENTSPLY International, the largest dental manufacturer in the world, we offer limitless potential growth and career opportunities; a comprehensive compensation package including a year end bonus, EPSP contribution, and excellent benefits. Qualified candidates should send a cover letter and resume with salary requirements to:

DENTSPLY Canada
Human Resources
161 Vinyl Court,
Woodbridge, Ontario L4L 4A3
Fax : (905) 851–9809

We're Expanding!!! (Ontario)

We require:

- Dentist for an Associate position
- Registered Restorative Dental Hygienist
- Registered Dental Hygienist
  (Maternity leave starting mid- to late-March)

We value superior technical skills, focus on warmth, caring and expert communication with our clients.

If you are searching for an exceptional opportunity to grow and fulfill your potential, please send your resume with reference to:

Dr. Rod Johnston
Box 10, Hwy 94
Corbeil, ON P0H 1K0
Fax: (705) 752–1570
E-mail: drjohnston@thot.net

We know that you will find our office an exciting and rewarding experience!

Fort St. John, British Columbia

Full-time dental hygienist position in young, expanding, modern clinic. Fort St. John is located close to skiing, great outdoors, and shopping. Many opportunities for spousal employment. Accommodations can be arranged.

Please fax resume to **Dr. Rob Myers at (250) 785–9936.**

Join Our Team! (Alberta)

A preventive family practice in Olds, Alberta is looking for an ethical and caring RDH to join its dental hygiene team. You will provide periodontal therapy as well as maintenance care in a friendly, relaxed environment. Part time or full time available, hours are flexible. Certification in local anaesthesia an asset, but not a requirement.

Olds is a dynamic, growing community of 6000 located 90km north of Calgary. A variety of recreational activities are available.

Please send resume to:

Dr. Kyle Craven and Dr. Allen Meyer
PO Box 4069
Olds, AB T4H 1P7
or e-mail to oldsfamilydental@hotmail.com

Full-Time Dental Hygienist (Ontario)

Required for a very busy preventive-oriented practice in a modern clinic located in Schreiber, Ontario (2 hours east of Thunder Bay)

Please submit resume and cover letter to:

Mountainview Dental Office
PO Box 538
Schreiber ON P0T 2S0

Port Alberni, BC

Permanent full-time dental hygienist required in beautiful Port Alberni, B.C.

Please call the office of Dr. H. Sperber for more details at **(250) 724–3381** or fax your resume to **(250) 724–3341.**

Ottawa, Ontario

Bilingual Dentist and Dental Hygienists needed to join innovative Geriatric Care program. Maintain your professional independence while working with a comprehensive health care support team. It is time to apply your dental capabilities and adeptness within this dynamic concept. To meet the needs of our growing patient list fax resumes in complete confidence to **(613) 746-4334.**

Revelstoke, British Columbia

We currently require a dental hygienist to work maternity leave for Wednesday and Thursday starting April 1, 2000. We offer a competitive salary and an excellent lifestyle.

Please send your resume to:

Revelstoke Dental Centre
111-2nd Street West
Box 2879
Revelstoke BC V0E 2S0
Phone: (250) 837-6231
Fax: (250) 837-4229

CDHA FREE MEMBERSHIP

Congratulations to Wendy Dendekker of Otterville, Ontario, the lucky winner of the CDHA Free Membership. Wendy was eligible for the draw because her membership payment was received prior to October 31st, 1999. Ms. Dendekker will be reimbursed the amount of the CDHA portion of the payment for Active Membership for the 1999–2000 membership year.

NOTE IN ERRATA

In the case study (*Probe* Vol.33#4, p. 94/95 July/August, 1999 — author Glenda Lux) on the use of scaling and root planing in long term management of advanced periodontitis, figure 2 should read figure 3 and figure 3 should read figure 2.

Cranbrook British Columbia

We require a Dental Hygienist to cover a maternity leave in a General Practice around May 3rd-September 4th, 2000. Three full days 8:30am–5:00pm other options are available for full time.

Please call or reply A.S.A.P. to fill this great position!

Please send your resume to:

Dr. W. Dean Nish
240 - 1629 Baker St.
Cranbrook BC
V1C 1B4
Phone: (250) 426-2322
Fax: (250) 426-3343

North Shore Dental Temps Inc., British Columbia

"North Shore Dental Temps Inc." services the entire Greater Vancouver area and Vancouver Island. We are looking for qualified dental hygienists for a variety of part time and full time positions.

For further details, phone **(604) 990-8777**, fax **(604) 990-8762**, **e-mail nsdentaltemps@telus.net**

North West Territories

The Adam Dental Clinic would like to invite applications for two full-time registered dental hygienists. Candidates must be eligible to obtain a license in the N.W.T.

Please send resumes to:

Adam Dental Clinic
Box 1118
Yellowknife NT X1A 2N8
or fax **(867) 920-2790**
Attention Marty

Dental Hygienist — Hope, British Columbia

Hope is located 1 1/2 hours from Vancouver.

We are currently seeking a part-time or possibly leading into full-time dental hygienist to join our friendly, professional staff. Modern facilities and excellent working hours. If a five minute drive to work, affordable housing and living in the most beautiful setting in Canada appeals to you, this position is perfect. Excellent renumeration according to experience.

Please call:

Dr. Martin Drobis
Office: (604) 869-5412
Home: (604) 869-3533

Classified Ad Rates

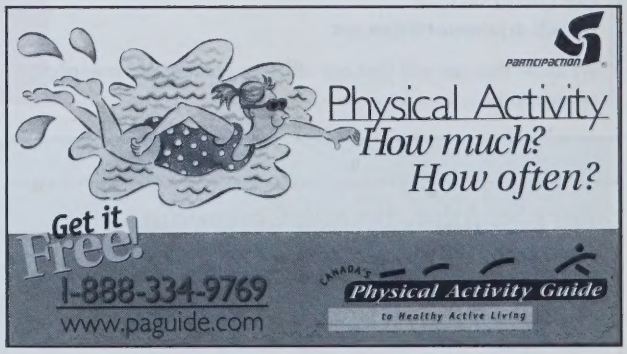
Fifty (50) words or less, $26.75 (GST included).
Additional words: $0.54 per word (GST included).

Closing date for the receipt of copy is approximately one month prior to publication date:

DEADLINE	ISSUE	CIRCULATION DATE
December 10	January/February	January 15
February 10	March/April	March 15
April 10	May/June	May 15
June 10	July/August	July 15
August 10	September/October	September 15
October 10	November/December	November 15

Advertisers' Index

BUTLER ..... IFC
HU FRIEDY ..... OBC
MERRILL–LYNCH 4
ORAL–B ..... TOC
PERIO REPORTS 13
SULCABRUSH ..... IBC & BRC



Sulcabrush® travel

NEW!

Get a handle on healthy Gums!™

Recommended for patients who have difficulty flossing!

Introductory special *

.75 ¢ each

(144 - Bulk)

*Offer expires May 31, 2000

The ***Sulcabrush®*** *travel* brush - it's a new stick inspired by both the ***Sulcabrush®*** and the ancient chew stick (mswaki).

The ***Sulcabrush®*** *travel* has the same bristle tip as the original ***Sulcabrush®***, without the angles. It's flatter, more compact and half the size, so it fits easily in a purse, briefcase, daytimer or pocket.

Most importantly, it effectively removes plaque between the teeth and stimulates the gums.

Wooden chewsticks have a rich history of usage throughout the Middle-East and Asia, where they are used with and without toothpaste.

The ***Sulcabrush®*** *travel* brush can be personalized.

To place your order, please call ***1 800 387 8777***

Special offer – Order form

Photocopy this page, cut here – place this order form in envelope and mail to the address below.

(Offer expires May 31, 2000)

○ Special **.75¢** each (144 - Bulk) **$108.00** + S&H + Txs.

Please PRINT clearly.

DDS Name

RDH Name (Contact)

Office Address (For Billing)

City

Province

Postal Code

Tel:

Fax:

○ VISA ○ MasterCard Card No.

Exp. Date

Name on Card

Signature

1 800 387 8777

16 Brisbane Road, Downsview
Ontario, Canada M3J 2J8

CAUTION
SHARP CURVES

When you're searching for the highest quality scalers, all signs lead to Hu-Friedy. Hu-Friedy scalers are the sharpest in the business, and they stay sharp longer. In fact, dental professionals use more Hu-Friedy scalers than all other brands combined. So take the high road, and follow the leader.

HU-FRIEDY DENTAL

To order, contact your dealer, or call 1-800-HU-FRIEDY

The Canadian Dental Hygienists Association

PROBE JOURNAL

de l'Association canadienne des hygiénistes dentaires

March/April 2000 vol. 34 no. 2

Second Report on Health of Canadians

Mechanical and Antimicrobial Therapy

Conference Registration for Victoria Included

DENTAL LIBRARY
UNIVERSITY OF TORONTO
124 EDWARD ST.
TORONTO M5G 1G6
ONTARIO, CANADA

CDHA
ACHD

BUTLER G·U·M

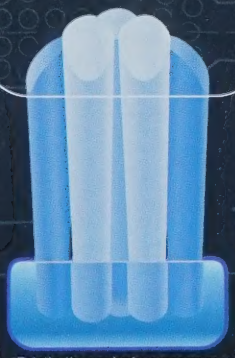
Micro Tip™ Toothbrush

Bristle design so advanced, it's tough on plaque but *gentle* on gums.

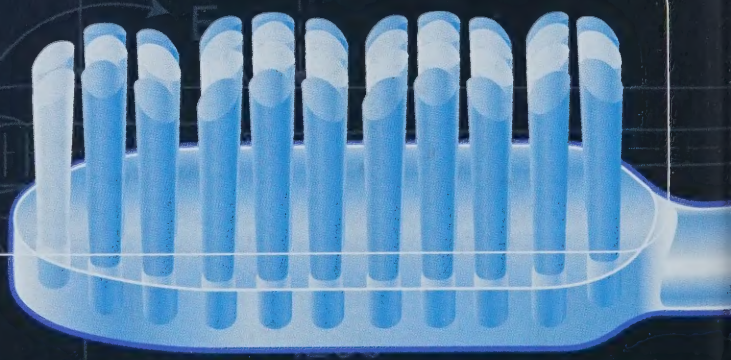
And *here's* why:

Innovative Micro Tip bristle technology increases bristle tips by 100% and is designed to gently clean the occlusal fissures, interproximal spaces and gingival crevices.*

The raised centre row bristle design is clinically proven to reduce plaque below the gumline.**



Unique interdental trim aligns with the tooth profile for gentle interproximal cleaning.



For more reasons, call 1-800-265-8353

www.jbutler.com

BUTLER G·U·M

Experts in Oral Care

*Bristle tip analysis compares a Regular size, Soft Micro Tip™ toothbrush to a Regular size, Soft Super Tip® toothbrush.
**Clinical data based on a study conducted at State University of New York at Buffalo. Data is available upon request.

What's the Mouth Got To Do With It?

LIBRARY APR 0 4 2000

Lynda McKeown, RDH, HBA, MA

The reporter from the local newspaper was interviewing me. He wanted to know more about the Fresh Breath Clinic. The conversation somehow moved from the topic of treating clients with oral malodor at the Fresh Breath Clinic to bacterial plaque removal for residents in long term care facilities. As I rambled on about lowering the bacterial 'loads' in the mouth to prevent other illnesses Jim, the reporter, interrupted. "What's the mouth go to do with other diseases?" "Various bacteria in the mouth have been found to contribute to other disease in the body," I replied.

During our conversation, I had 'introduced' Jim to Prophyromonas Gingivalis, Treponema Denticola and Bacteroides Forsythus in relation to periodontal disease and chronic bad breath. He was 'mildly' interested. After all, he had a job to do. He had to prepare an article for the health section of the paper. He was being appropriately attentive as I supplied information about testing for breath odor.

Then I remembered something on my desk. My sister had e-mailed an article prepared by Christian Millman, prepared for a Men's Health section for ABC News. I was able to quote: "Farmers, cowboys and other sensible men always examine a horse's mouth before buying the animal. One good look can sum up the horse's health history and predict how long the old boy will live. A human mouth isn't much different. Keep your pie hole clean so disease causing bacteria don't gain entry to your blood stream."

I could tell that I had 'caught' his attention. It was my good fortune that another part of the article referred to bacteria we had previously mentioned when we talked about breath odor problems.

Dr. Robert J. Genco of the University of Buffalo studies 1372 people at the Gila River Indian community in Arizona. He found that those with gum disease had triple the risk of heart attacks in a 10-year period. He believes that oral bacteria enter the blood stream through small tears in the gums. The bacteria, Genco suggests, may infect the liver and cause it to produce artery clogging proteins, or the bacteria may directly infect the heart arteries and somehow cause blockages. The exact mode of attack is still a mystery, but porphyromonas gingivalis bacteria have been found in fatty arterial blockages that cause heart failure.

A further portion of the article related to our discussion about residents in long term care: "With every breath, your lungs suck down a stew of bacteria including chlamydia, pneumonia and pseudommas aeruginosa, two bugs that cause respiratory disease. Our immune systems usually destroy these invaders, but when a person's resistance is low, such as during an illness or after surgery, these bugs can infect our lungs and cause bacterial pneumonia."

I explained to Jim that if a person in a long term care facility has a great deal of bacterial accumulation in their mouth, the 'barrier systems' of the mouth may 'break down' resulting in respiratory pneumonia. If a resident has to be moved to an acute care facility for treatment, this is costly to the publicly funded health care system. Therefore, it is cost effective to keep the mouth clean.

Now I observe that Jim is thinking. Then he said to me, "My dentist takes about 15 minutes to clean my teeth. My friends tell me that their appointments are usually an hour. Now it is my turn to pause and think."

"Jim," I said, "How about asking your paper if you can do an assignment? We have a dental hygiene program at the Community College in town. A dental hygiene student will examine your mouth and clean your teeth with faculty supervision. Not only will you get a human interest story, you will also gain a better understanding of the importance of a clean mouth."

As dental hygienists, we need to take advantage of opportunities in our communities to explain what the mouth has to do with general health and wellness. Jim titled his article; "*It's a Jungle in There!*" The title teases the reader to pursue the information: "**What the Mouth Has To Do With It.**"

There is no other dentifrice like

Colgate Total* is the first and only dentifrice to go beyond caries protection to provide long-lasting antimicrobial protection against plaque, calculus and gingivitis.

Fights caries.

As confirmed by separate investigations, the 0.243% NaF in Colgate Total* dentifrice affords the same protection against caries as it does in other Colgate* dentifrices.

Fights plaque.

Long-term studies show an average 45% reduction in plaque, and 57% reduction in gingivitis (Plaque and Gingivitis Severity Index). While levels of some microflora are reduced, four long term studies confirm Colgate Total* dentifrice produces no shift in plaque microflora favouring growth of opportunistic or pathogenic species.

Fights calculus.

Clinical studies show that subjects using Colgate Total* dentifrice experience, on average, a 25% reduction in calculus versus a control group.

Fights gingivitis.

Because of its unique combination of 0.3% Triclosan and the copolymer Gantrez, only Colgate Total* dentifrice provides a sustained antibacterial effect for up to 12 hours. The benefits of Colgate Total* dentifrice in reducing microbial plaque and gingivitis have been established in over 16 independent double blind long-term clinical studies.

Colgate Total is the first and only dentifrice to earn the Canadian Dental Association's seal of approval for gingivitis reduction and in helping to prevent tooth decay.*

Please call 1-800-225-3756 with any questions or if you require any additional information.

*TM Reg'd Colgate-Palmolive Canada Inc. 99 Vanderhoof Ave., Toronto, Ontario M4G 2H6

CONTENTS

Vol. 34 No. 2– 2000

43 **PRESIDENT'S MESSAGE**

What's the Mouth Got To Do With it?
By Lynda McKeown, RDH, HBA, MA

46 **NEWS**

FEATURE REPORTS

49 CDHA Summary of the Second Report on the Health of Canadians — "Toward a Healthy Future"
Reproduced with permission of the Minister of Public Works and Government Services, Canada 2000

65 Mechanical and Antimicrobial Therapy: Roles in the Treatment of Periodontal Disease
By Dr. Murray Arlin DDS, Dip. Perio., FRCD (C)

58 **EDUCATION**

Creating Practitioners for the New Century
Submitted by Patricia Covington, RDH and Patricia Noble, RDH, MEd.

59 **BOOK REVIEW**

The Proceedings of the European Workshop on Mechanical Plaque Control
Submitted by Ursula Pelissero, RDH

60 **11TH ANNUAL CDHA PROFESSIONAL CONFERENCE — 2000**

Partnerships in Health — Broadening Our Professional Horizons

DENTAL ABSTRACTS

68 Occupational Risk Update on Hepatitis Viruses A, B, C, D, E and G

69 Periodontics : Understanding the Pathogenesis of Periodontal Diseases

70 Oral Medicine : How Oral Bacteria May Affect the Lungs

70 Periodontics : Controlled-Release, Local-Delivery Drugs for Periodontitis

INFORMATION

72 National Dental Hygiene Week Update

74 Breakthrough Quit Smoking Program Launched by the Canadian Cancer Society

A Healthy Diet for People with Diabetes

76 Probing the Net

78 Classifieds

Advertisers' Index

Probe Advertising Rates

77 **NEW PRODUCTS**

Photo courtesy of Tourism Victoria

ON THE COVER:
Come to the 11th Annual CDHA Professional Conference and enjoy British Columbia's natural beauty.

MANAGER, COMMUNICATIONS SERVICES: Angela J. Whelan, B.A.
EXECUTIVE DIRECTOR: C. Matheson Worobey, Dip.D.H.
EDITORIAL ADVISOR: K. Edwards, M.A.
CONTRIBUTORS
Leanne Carlson-Mann, Dip.D.T., Dip.D.H.
Carol Barr Overholt, Dip.D.H., B.Ed.
Karen Wolf, Dip.D.H.
EDITORIAL BOARD
B. Fortune, Dip.D.H.
R. Lunn, Dip.D.H.
L. MacDonald, Dip.D.H., B.Sc.D., M.Ed.
J. Waites, Dip.D.H.
DESIGN: Edels-Marcotte

Published six times a year, Jan./Feb., Mar./Apr., May/June (Scientific Issue), July/Aug., Sept./Oct., Nov./Dec. (Scientific Issue), by The Canadian Dental Hygienists Association,
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Tel (613) 224–5515

Canada Post Publications Mail Registration No. 09877
CANADIAN POSTMASTER: Notice of change of address and undeliverables should be sent to:
Canadian Dental Hygienists Association
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Subscriptions $75.00 (GST Included) in Canada, $125.00 Cdn for US and $130.00 Cdn elsewhere. Fifty cents per issue is allocated from membership fees for journal production. All statements are those of the authors and do not necessarily represent the CDHA, its Board, or its staff.
ADVERTISING AND SUBSCRIPTIONS:
Keith Health Care Inc.
10 Front Street South
Mississauga, ON L5H 2C4
(905) 278–6700
CDHA 2000
6176 CN ISSN 0 834–1494
GST Registration No. R106845233

CDHA CENTRAL OFFICE STAFF
Executive Director: Carol Matheson Worobey
Manager, Communications Services: Angela J. Whelan
Manager, Finance and Administration: Monique Belleau Rock
Manager, Member Services: Sandra VanWart
Member Services Assistant: Louise Lalonde
Administrative/Executive Assistant: Shelly Minnie
Receptionist/Information Clerk: Francine Fortin
All CDHA members are invited to call the CDHA's Member Line toll-free, with their questions/inquiries:
1–800–267–5235, Fax (613) 224–7283
Internet: http://www.cdha.ca E-mail: info@cdha.ca
We look forward to serving you.

The Canadian Dental Hygienists Association's Journal, *Probe*, is the official publication of the CDHA. The CDHA invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to *Probe* do not necessarily represent the views of the CDHA, nor can the CDHA guarantee the authenticity of the reported research. Copyright 1999. All materials subject to this copyright may be photocopied for the non-commercial purpose of scientific or educational advancement.

CDHA Roster of Corporate Partners Continues to Grow

New Resources for National Awareness Campaign and More

What began last summer with the signing of a two-year partnership agreement between the CDHA and Warner-Lambert (makers of Listerine oral rinse) has become a growing roster of corporate partners that includes recognized leaders in a number of fields.

Some of the CDHA communications vehicles which have attracted support and sponsorship include the National Dental Hygiene Week advertising campaign, the CDHA Scholarship, *Probe*, our annual convention and student calendars.

CDHA is pleased to welcome Oral B Canada and 3M Canada as CDHA corporate partners. Their recognition of the role CDHA and the dental hygiene profession play in contributing to the health of the Canadian public is appreciated.

"With the support of our corporate partners, explained Carol Matheson Worobey, we can continue to expand our communications activities and put an effective cycle into place. As public awareness of the role of our profession increases, and as dental hygienists continue to strongly support their professional associations, the corporate sector will show even more interest in associating with dental hygiene."

Indeed, the efforts of CDHA to work with the corporate partners are ongoing. CDHA is also approaching major retail outlets and looking for other opportunities to link our growing membership with organizations who want to associate with our acknowledged expertise, trust and tradition of public outreach and education. Probe will keep you posted on any new developments in corporate partnerships. In the meantime, please join us in saluting our roster of corporations who have shown their genuine support for our profession.

Oral-B®

3M Dental

Listerine is a trademark of Warner-Lambert Co.

To the Editor — "Thanks to Dental Hygienist"

This letter appeared in the November 24, 1999 edition of the* EXPRESS, *Nelson, BC.

Dear Editor:

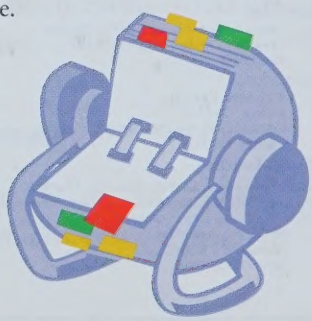
In respect to the profession of dental hygienists, I wish to say thank you to my dental hygienist Mara Sand, who saved my life. In the course of performing her routine examination prior to cleaning my teeth, Mara found swollen lymph nodes on my neck, which were subsequently determined as cancerous. Without her, the cancer would have likely remained undetected.

My surgeon, oncologist, and all the other health professionals I have been seeing have expressed the highest praise for my dental hygienist's ability to detect the cancer. You see, I have always been a person living a healthy lifestyle with none of the risk factors normally associated with cancer. I do not smoke or drink and exhibited none of the outwardly indications that I was living with a life threatening disease.

Without the high degree of professionalism exhibited by Mara, my doctors agree that the cancer likely would have gone undetected for some time, consequently compromising my chances for recovery. I am especially grateful to Mara because if it weren't for her specialized practice and friendship, I wouldn't have been accessing dental hygiene care as often as I should. You see, she provides an alternative dental hygiene service for people like me who cannot or choose not to access this care in a regular dental office.

Thank you Mara Sand for saving my life and helping others access dental hygiene care.

Tom Gaines,
Nelson, BC



CDHA at Federal Labour Mobility Meeting

CDHA Executive Director, Carol Matheson Worobey, attended the National Labour Mobility meeting in Montreal in early November 1999. Canadian dental hygiene registrars, and representatives of the CDHA, the National Dental Hygiene Certification Board and the Commission on Dental Accreditation of Canada gathered to discuss the Federal/Provincial Agreement on Internal Trade. The purpose of the AIT is to eliminate inter-provincial barriers for workers, goods, permits and capital. An agreement for dental hygienists is required on or before July 2001 to provide compliance with the interprovincial trade agreement reached by all ten provinces and territories in Canada. The outcome of the meeting was the development of a draft agreement, including both national accreditation and certification, which will be returned to all provincial dental hygiene regulatory authorities for review. The intent of the agreement is to harmonize provincial regulations to provide greater interprovincial mobility for dental hygienists to practice across Canada.

1999 CDHA Dental Hygiene Research Grant Recipient Eunice Edgington

CDHA is pleased to announce the awarding of the 1999 CDHA Dental Hygiene Research Grant to Eunice Edgington of Edmonton, Alberta. Ms. Edgington is an educator with the Dental Hygiene Program, University of Alberta.

Ms. Edgington has been awarded the grant for her work "Repetitive Motion Analysis and Forearm Muscle Oxygenation during the Delivery of Dental Hygiene Therapy and the Recommendation of Ergonomic Intervention Strategies".

IN ERRATA

In the January/February 2000, vol. 34 #1 issue of *Probe Journal*, Patty Gardiner should have read Patricia Gainer. We appologize for any inconvenience.

Provincial/National Committee Meet for National Dental Hygiene Week™

The CDHA staff and representatives of Provincial Dental Hygienists Associations met the weekend of February 12th–13th, 2000 in Ottawa to discuss, evaluate, and plan the national communications program for National Dental Hygiene Week™.

Dental Hygiene Representatives included:

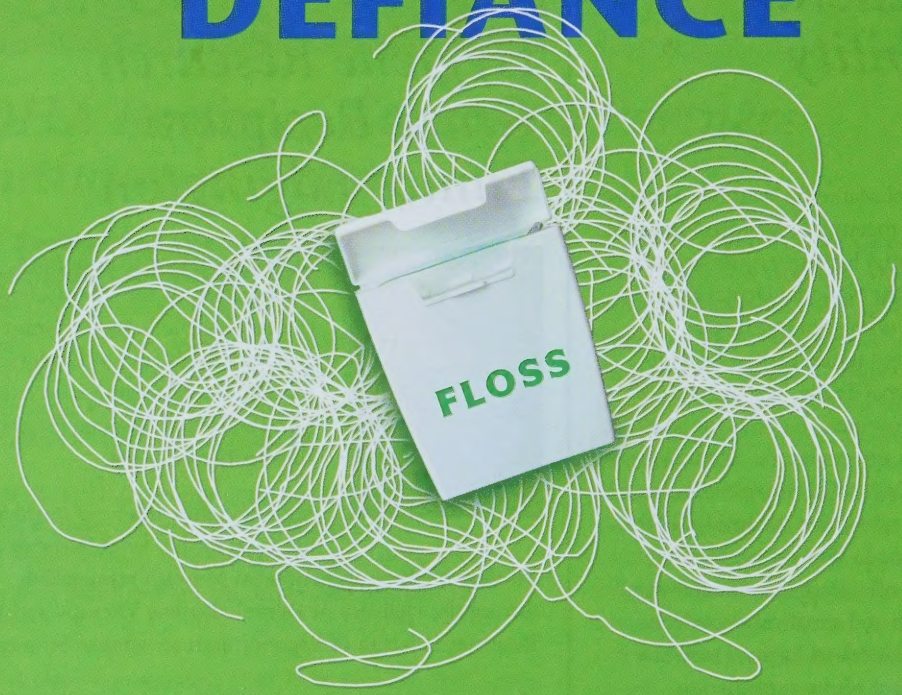
- *Judy Clarke* — Canadian Dental Hygienists Association
- *Beverley Contreras* — British Columbia Dental Hygienists Association
- *Stacy Mackie* — Alberta Dental Hygienists Association
- *Sandra Lawlor* — Ontario Dental Hygienists Association
- *Shannon O'Neill* — Atlantic Dental Hygienists Associations
- *Nancy Harwood* — Federation of Dental Hygiene Regulatory Authorities
- *Dianne Landry* — National Dental Hygiene Certification Board
- *Marcia Crowford*— Saskatchewan Dental Hygienists Association
- *Angela Whelan & Carol Matheson Worobey* — CDHA Staff

Delta Media partner, Bernie Gauthier, lead the group through a morning of background and evaluation of the National Dental Hygiene Week™ program over the past two years. Saturday afternoon and Sunday morning were spent gathering input from all participants on how to continue to develop and expand the program. The weekend resulted in a strong coordinated outcome of exciting plans and positive planning for the future.

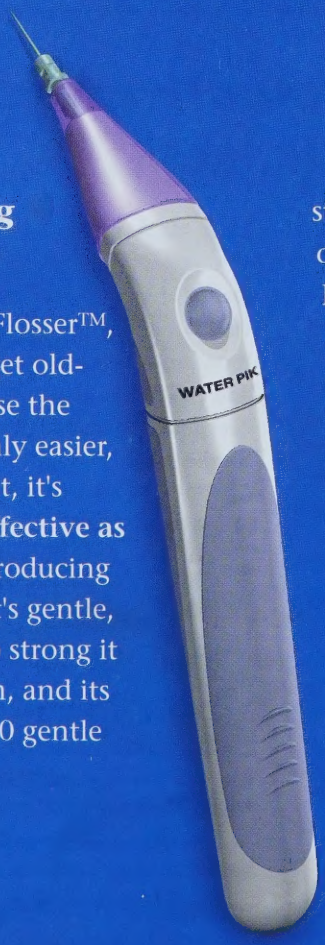
Back Row L–R: Shannon O'Neill, Nancy Harwood, Sandra Lawlor, Angela Whelan, Dianne Landry, Carol Matheson Worobey

Front Row L–R: Marcia Crawford, Stacy Mackie, Judy Clarke, Missing: Beverley Contreras.

DEFIANCE



COMPLIANCE



Having trouble getting your patients to floss?

With the the new Water Pik Flosser™, it's automatic. They can forget old-fashioned dental floss. Because the Water Pik Flosser ™ is not only easier, quicker, and more convenient, it's **clinically proven to be as effective as manual flossing** - without producing soft tissue damage. Though it's gentle, its single nylon filament is so strong it won't break off between teeth, and its up-and-down action at 10,000 gentle strokes a minute ensures thorough, one-handed cleaning. Plus, the Water Pik Flosser™ is portable, so patients can practice sound oral hygiene even on the road. Perhaps best of all, it's from Waterpik Technologies, the company you trust for the best in oral health innovation.

Water Pik
Flosser™
FLOSSING WITHOUT FLOSS

www.waterpik.com

See us at ODA for a demonstration and an exciting introductory offer.

CDHA SUMMARY OF THE SECOND REPORT ON THE HEALTH OF CANADIANS

Toward a Healthy Future

From Towards a Healthy Future — Second Report on the Health of Canadians, Health Canada, 1999. Reproduced with permission of the Minister of Public Works and Government Services, Canada 2000.

Preface

Toward a Healthy Future: Second Report on the Health of Canadians is the result of a collaborative effort by the Federal, Provincial and Territorial Advisory Committee on Population Health (ACPH), Health Canada, Statistics Canada, the Canadian Institute for Health Information and a project team from the Centre for Health Promotion, University of Toronto.

The role of the Advisory Committee is to advise the Conference of Deputy Ministers of Health on national and interprovincial strategies to improve the health status of the Canadian population and to provide a more integrated approach to health.

As the title suggests, this is the second report to summarize and comment on the state of the nation's health. The first report was released in September 1996. The current report differs from the first one as it puts more emphasis on the influence of gender and socioeconomic status on health.

Print copies of the entire report and the Statistical Report on the Health of Canadians are available from Provincial and Territorial Ministries of Health or from:

Publications
Health Canada
Tunney's Pasture (AL0900C2)
Ottawa, ON K1A 0K9
Telephone: (613) 954-5995
Fax: (613) 941-5366
E-mail: Info@www.hc-sc.gc.ca

Chapter 1 — The Health Status of Canadians

REDUCING INEQUITIES

As Canada stands poised to enter a new millennium, reducing persistent inequities in health status remains one of our greatest challenges to achieving population health. Canadians with low incomes and low levels of education (which are often related) are more likely to have poor health status, no matter which measure of health is used. They are also more likely to die earlier than other Canadians, no matter which cause of death is considered.

Chapter 1 shows that poor health is not just the result of economic deprivation — indeed, an active gradient is at work. In other words, health status improves for all Canadians with each step up the economic ladder. Current thinking suggests that this may be related to increased susceptibility to disease processes related to the stresses of disadvantage and the coping skills people possess, in addition to increased exposure to threats in the physical environment.

This report recognizes the inherent challenges in achieving the goal of reduced inequities. Virtually all societies struggle with this problem. Achieving complete equality in health status among all Canadians is an unrealistic goal. But achieving "equitable" or fair access to the opportunities in education, employment, wages and participation in political and economic spheres are the key strategies for reducing inequities and, therefore, improving the health and well-being of Canadians.

ADDRESSING DIFFERENCES IN POPULATION GROUPS

This report and others point to the urgent need to find effective ways to improve the health of Canada's Aboriginal people. Failure to address inequities in the health and socioeconomic status of Aboriginal people will inevitably lead to continuing disparities and to an increase in illness, suffering and early deaths for this population.

Aboriginal communities have the lead role in finding ways to enable their people to take control of and improve their health. However, to do so will require all policy-makers and practitioners (both Aboriginal and non-Aboriginal) to work with Canada's Native peoples to find culturally appropriate ways to improve their health and well-being.

GENDER HAS AN IMPORTANT INFLUENCE ON HEALTH

In the last half of this century, women have lived longer than men; however, the gap in life expectancy at birth between

women and men has continued to narrow — from 7.5 years in 1978 to 5.7 years in 1996.[58] This may be due to a number of factors including increases in stress on women and decreases in the major causes of premature death among men, especially ischemic heart disease and lung cancer.

While this reduction in two of the major causes of death among men is welcome, premature mortality rates continue to be substantially higher among men than women. If male mortality rates are to be further reduced, increasing attention needs to be paid to other major causes of death among men, including fatal injuries and suicide.

While a decrease in lung cancer deaths is good news for men, cancer death rates have remained stubbornly persistent for women, mainly due to continuing increases in long cancer mortality. At the same time, smoking rates among young women have continued to escalate (*see Chapter 5*). Indeed, adolescent women are now more likely to smoke than adolescent men. Unless the trend toward increased smoking among young women is quickly reversed, lung cancer will increasingly become a major killer of women.

Quality of life is as important as quantity. While women live longer than men, they also suffer more from chronic diseases and disabilities. Efforts to prevent these problems in the senior years are essential to maintaining and improving the health of both women and men, but may be particularly important to women.

Chapter 1 (and others to follow) also suggests a need to address the psychosocial well-being of young people. Low scores for psychological well-being, high scores for probable depression and high rates of suicide are warning signs that many of Canada's young people are greatly troubled. Increases in substance use and multiple risk behaviours, which will be discussed in subsequent chapters, are further signs of youth distress. The next chapter suggests that enhanced employment opportunities, incentives for higher education and nurturing communities are all prerequisites for improving the well-being of Canada's young people.

INCREASING HEALTH PROMOTION AND DISEASE AND INJURY PREVENTION ACTIVITIES IN KEY AREAS

Most of the causes of disease, disability and early death explored in this chapter are preventable. In the cases of heart disease and cancer, we are beginning to see some positive results from ongoing efforts to prevent and reduce these diseases. These initiatives (and others) need to continue, with an increased focus on Canadians with low incomes and low levels of education.

Deaths and disabilities due to smoking and unintentional injuries are almost all preventable. As such, they must remain a high priority for policy-makers and practitioners. In terms of injuries, we need to pay attention to and better understand gender and age differences in risk-taking behaviour, the causes of both intentional and non-intentional injuries, and how they are best prevented. Reducing the very high rates of injury and injury-related deaths among Aboriginal young people must also be a priority for action.

Chapter 2 — The Socioeconomic Environment

INCOME, INCOME DISTRIBUTION AND HEALTH

In terms of economic status, the first concern is for individuals and families living in low income situations. As shown in *Chapter 1*, people with higher incomes live longer, healthier lives than people with low incomes. This relationship persists, regardless of gender, culture or race, even though the causes of illness and death may vary.[57]

Low income in Canada is often related to gender. Women, especially single mothers and unattached seniors, remain particularly vulnerable. As we have seen in this chapter, low-income status is also linked to age. In 1995, very young children (under the age of 6) and youth (aged 18 to 24) were most likely to live below the LICO. Despite the recent resolution of governments and non-governmental organizations to end child poverty by the year 2000, we have seen the proportion of young children living in low-income situations increase from one in five to one in four in 1995. To many Canadians, this is unacceptable in a country as prosperous as Canada.

Children are poor because their families are poor. Increases in poverty among all family types are directly related to a number of trends: cyclical recessions in the economy; the growth of earning inequities (especially between young and older workers); changes in family structure; reduced access to affordable housing (*see Chapter 4*); and reductions in social assistance in some jurisdictions. A renewed effort to address child and family poverty is required, as is a solid plan for doing so.

A second concern relates to the distribution of income in Canada. **A growing body of literature on health suggests that as the gap widens between the rich and poor, so too does the gap in health status in any given population.**[58] This chapter has shown that tax redistribution policies and transfers are critical to reducing income inequities. Increasing opportunities for education, lifelong learning and employment in meaningful work are also important.

Efforts to reduce economic inequities in Canada stand to benefit middle- and upper-income Canadians, as well as those with low-income status. In the long run, investing money and effort in reducing disparities now will save both money and suffering in terms of increasingly poor health status in the future.

Reducing inequities is also important for sustaining the overall quality of life in communities across Canada. Richard Wilkinson has shown that societies with greater economic inequalities begin to "disintegrate" — that is, they show evidence of decreased social cohesion or citizen commitment to society.[59]

EMPLOYMENT AND HEALTH

Despite a slight recovery in 1998, persistent high levels of unemployment combined with dramatic increases in the amount of part-time or temporary work have led to large relative declines in average wages among young Canadians. These trends have reduced young people's opportunities for upward economic mobility. In other words, the current generation of youth are less likely to achieve or surpass their parents' standard of living. These trends have also contributed to the increase in poverty among young families.

If Canada is to remain a vibrant and productive society in the new millennium, young people in Canada must be provided with increased opportunities for meaningful employment.

Women earn significantly less than men, even when their education and literacy skills are equal. Job insecurity is higher for women than men because more women work part-time or lose job seniority if they take time off to be with young children. Women are disadvantaged relative to men in terms of job satisfaction because they are more likely to work in situations affording them little control over the pace and content of their tasks.[60] The relationship between lack of control at work and poor health has been well documented.[61]

When it comes to unpaid work, the situations of women and men diverge even more. The role overload documented in this chapter is extremely stressful. In one recent study, 85% of working women said that there were not enough hours in the day to accomplish everything they needed to do and more than one-quarter had thought about quitting their job because the effort of balancing work and family life was too stressful.[62]

At the same time, young women in their 20s are now more likely than their male counterparts to graduate from college and university. As well, low-skilled male workers were particularly hard hit by recent recessions. As employment opportunities continue to shift from low-skilled, knowledge-dependent jobs, young men need to be encouraged to stay in school.

EDUCATION, LITERACY AND HEALTH

In most cases, employment, education and income are inextricably linked. The world of work is increasingly demanding: it is estimated that two-thirds of new jobs in the year 2000 will require more than 17 years of education.[63] For young people, educational attainment is the single most important factor in determining whether or not they obtain a job that will enable them to support themselves and a family. In 1994, for example, the unemployment rate for Canadians aged 25 to 29 with no more than a primary school education was almost four times the rate for young people with a university education.[64]

There are many factors that help or hinder a young person's desire and ability to pursue an education. The 1995 School Leavers Follow-Up Survey[65] suggests that young people who leave high school before graduation (22% of young men and 14% of young women) are more likely to:

- dislike school, skip classes and have friends not attending school
- come from families who did not think high school completion was very important
- come from lower socioeconomic backgrounds
- be married and have dependent children
- have failed an elementary grade and have lower grade averages
- cite work-related reason (mostly male) for leaving e.g. having to work for financial reasons, preferring work to school)
- cite family motivations for leaving (mostly female) (e.g. pregnancy/marriage, problems at home).

These findings suggest that efforts to help young people stay in school should include support for early childhood development (*see Chapter 3*), the provision of nurturing school environments, community support for troubled young people, renewed focus on preventing adolescent pregnancy, and the provision of support for students who cannot afford to stay in school.

While the increase in the number of university graduates (particularly young women) is welcome, several recent reports have pointed to a growing concern about the increasing costs of attending college and university. While many young men and women from high-income families take advantage of post-secondary education opportunities that lead to professional careers, increasingly, students from low-and middle-income families cannot afford to pursue a higher education without incurring a large debt.[66]

Literacy levels, which are usually, but not always, related to levels of education, are important predictors of employment, active participation in the community and health status. They are also important predictors of the success of a nation. As discussed in *Chapter 2*, Canada's first-place ranking on the UN Human Development Index drops to 10th when factors such as income distribution and literacy are factored in. In 1995, Canada had more than twice the proportion of citizens who lacked adequate literacy skills as Sweden, the number one ranked country on the Human Poverty Index for industrialized countries.[67]

THE SOCIAL ENVIRONMENT AND HEALTH

A growing body of evidence suggests that decreased social capital is a precursor of increased illness and death.[68] Kawatchi and Kennedy, who found that high levels of trust and group membership in W.S. states were associated with reduced mortality rates, make the case that economic inequities contribute to increases in crime and violence, deteriorating health and education systems and other social problems.[69]

While this report suggests that crime is decreasing in most jurisdictions, crime levels remain higher than a decade ago. Family violence and abuse remain pervasive social problems. And many Canadians are concerned about recent, highly publicized incidents of youth alienation and violence at school.

Family violence and abuse have a devastating effect on health in both the long and short term. Everyone — family members, neighbours, health and social service professionals, teachers, policy, community leaders, employers, voluntary organizations, the justice system and governments — has a role to play in preventing family violence by intervening to protect victims, who are most often women and children. This violence will not be eliminated until society as a whole makes it unacceptable.

The strongest predictors of wife assault are the young age of a couple (18 to 24 years), chronic unemployment of male partners, living in a common-law relationship, witnessing abuse as a child, and the presence of emotional abuse in the relationship. Research also shows that children who are abused or witness abuse are at increased risk of becoming perpetrators of violence themsleves.[70] Thus, family violence is both an intergenerational and systemic issue. Efforts to prevent family violence must include strategies to employ young people in meaningful jobs, and to help prepare them for intimate, egalitarian relationships and the role of parenting.

The information in this chapter on social support, giving and civic participation suggests that Canadians are, by and large, a caring society. Richard Wilkinson and others who have studied this area in detail suggest that the pursuit of a positive social fabric and narrower income differentials is complementary to both economic growth and improved population health.[71, 72]

THE ROLE OF THE HEALTH SECTOR

Some people may question this in-depth discussion on the socioeconomic environment in a health report. The reason is simply this: the evidence in this report and others suggests that many of the root causes of poor health lie in the socioeconomic conditions in which people live. Many of these conditions fall under the mandate of sectors outside of health, including education, justice, housing, employment and others. The health sector cannot impose its agenda on other sectors, but it can initiate dialogue and act as a collaborator in collective efforts to improve the well-being of all Canadians. This is a somewhat new and sometimes difficult role, but one that will become increasingly important as we learn more about the underlying determinants of health.

Chapter 3 — Healthy Child Development

Chapter 3 points to the usefulness of a child development framework when examining the indicators of both health and positive development for Canada's children and youth.

In the first stage (prenatal to age 18 months), broad, intersectoral strategies are required to promote positive birth outcomes and to support new parents so that all babies can make a loving and secure attachment with a parent(s) or other adult caregivers. Positive parenting and opportunities for early learning are critical to successful development in the second stage. During the school years, efforts to help children achieve positive social and behavioural skills and to advance their cognitive development are essential. In the adolescent period, there is an emerging, clear need to address the social and emotional well-being of young people.

There are also a number of cross-cutting concerns that affect children in all stages of development, including socioeconomic status, family transitions (*see Chapter 2*), environmental contaminants (*see Chapter 4*) and family violence.

Overall, this report points to the need to emphasize broad strategies to strengthen families and healthy child development, which are summarized below.

INVEST IN THE EARLY YEARS

As we have seen in this section, healthy child development has its roots in our earliest life experiences. Investing in prenatal health and the first five years of life is good for children, and for the economy. Indeed, one study showed that every dollar spent in early intervention can save seven dollars in future expenditures on health and social spending.[68] Despite this knowledge, governments and communities tend to commit greater financial investments later in the life cycle, thus missing the most critical time to promote human competence and potential. Investing in the early stages of life must become a priority.

REDUCE INEQUITIES BETWEEN CHILDREN LIVING IN DIFFERENT SOCIOECONOMIC SITUATIONS

Efforts to improve conditions that maximize all children's healthy development and well-being will have a positive impact on all children, especially those living in the worst socioeconomic conditions. In fact, improving conditions for those living in low socioeconomic conditions has been shown to help improve conditions for those living in high socioeconomic conditions. All children required access to nurturing, stimulating, supportive, caring and safe environments. Children's rights to these basic determinants of health are protected under the United Nations Convention on the Rights of the Child, which was ratified by Canada in 1991. At present, access to these factors differs by socioeconomic status.

SUPPORT PARENTS AND FAMILIES

Parents are the most important people in children's lives and families are the focus of child rearing. Therefore, it is ironic that so little time is spent preparing young people to parent. Efforts to give young people and young parents the information and support they need to parent well are investments in the healthy development of children. Families involved in the processes of separation and divorce are exposed to high levels of psychological and economic stress and may require extra help with parenting at this time.

The information in this chapter has demonstrated a consistent link between a mother's education and several indicators of a healthy start in life. Investing in the early years of childhood includes investing in young people, especially young women, before they become parents. School and

community programs are also needed to help young men learn to be good partners and nurturing parents, and to help them build skills related to fathering.

ENHANCE THE PSYCHOLOGICAL AND EMOTIONAL WELL-BEING OF YOUNG PEOPLE

Chapter 3, combined with *Chapters 1, 2* and *5*, shows an emerging and disturbing picture of the psychological and social well-being of youth in Canada. High rates of depression and stress and low rates of self-esteem are invariably linked to the broader picture presented in *Chapter 2* of socioeconomic conditions and unemployment among young people. As they enter a new century, young people in the transition to adulthood face a very different environment than their parents did. In fact, the natural pattern of development is changing rapidly. Young people are staying at home and in school longer because they no longer have a straightforward transition from school to employment. Easy access to permanent, full-time jobs is a thing of the past. They are coping with more stresses and at a younger age than the generation before them. Early school leaving and substance abuse among certain groups are signs of adolescent stress.

Young people are Canada's leaders in the next century. A comprehensive intersectoral strategy involving health, education, social services, the private sector and young people themselves is urgently needed to find effective ways to support the healthy development of youth in changing times.

PAY ATTENTION TO GENDER DIFFERENCES

When broad strategies for healthy child development are discussed, there often is no distinction made between the health status, capacities and needs of boys and girls. Certainly, all children require similar supports to grow up healthy. However, the data presented in this chapter suggest that a strategy for children must always take into account the differences in how girls and boys experience the process of development. For example, reducing injuries and behaviour problems appears to be a priority for boys; reducing family violence and the early onset of smoking is a priority for girls and young women.

UPHOLD THE RIGHT OF CHILDREN AND YOUTH TO A SAFE AND SECURE ENVIRONMENT

"Failure to protect the physical, mental and emotional development of children (and young people) is the principal means by which humanity's difficulties are compounded and its problems perpetuated." This statement from UNICEF's State of the World's Children 1990 Report is the fundamental principle underlying the need to protect all of Canada's children and youth from abuse, neglect and exploitation and to ensure that they have a safe and stable home.

ACCEPT AND SHARE RESPONSIBILITY

The public is highly supportive of efforts to help children meet their full potential and the health of children is now solidly on the agenda of all governments. But governments cannot do it alone. It does, indeed, take a whole village to raise a healthy child. Community action is an important complement to government action. Neighbourhoods must be safe and supportive of healthy child development. The private sector must also be involved, since the time/income dynamic has important implications for parenting capacity. When governments, businesses, communities, families and young people work together, children and youth have the best chance of growing up to be healthy, productive adults.

Chapter 4 — Physical Environment

SUSTAINABLE DEVELOPMENT

In terms of creating and sustaining physical environments that promote health, the greatest challenge we face is to create a more sustainable society. Sustainable development calls for a balanced approach in which economic vitality, environmental integrity, human development and social well-being are all considered and equally weighed when decisions are made. This balance must be achieved not only in a Canadian context, but also globally. Encouraging Canadians and Canadian institutions to "think globally and act locally" is still a good strategy.

THE NATURAL ENVIRONMENT

In the natural environment, reducing fossil fuel emissions is an immediate and long-term priority. Fossil fuel combustion is believed to be a major cause of both climate change and air pollution. The two problems are also related from a health perspective. As the global climate warms, air pollution and smog production will worsen, resulting in further increases in respiratory illnesses and deaths.

The Kyoto Protocol of December 1997 established emission reduction targets for the year 2012. Canada agreed to reduce its greenhouse emissions by 6% below 1990 levels between the years 2008 and 2012. The health and quality of life of Canadians and others will benefit greatly from the immediate and long-term implementation of intersectoral strategies to increase energy efficiency and reduce fossil fuel emissions. Reducing air pollution will also reduce the billions of dollars lost in early deaths and spent on health services to treat asthma and other respiratory diseases.

THE BUILT ENVIRONMENT

Within the built environment, air quality is seriously compromised by environmental tobacco smoke which takes a large toll on health, especially the health of children. Concerted action on this issue needs to continue.

The data reported in this chapter suggest that Canada is experiencing a housing affordability crisis. As family incomes and support for social housing have dropped in many jurisdictions, housing costs have remained high, especially for renters. One of the quickest and most direct ways to decrease the inequities discussed throughout this report is to increase access to affordable housing for all Canadians. Working with Aboriginal people both on and off reserve to ensure that housing is adequate in both quantity and quality must be a top priority.

There is also a growing number of Canadians who believe that homelessness in one of the world's richest countries is a national and community disgrace that should be rectified. A recent study that looked at predictors of entry into shelters and subsequent housing stability for a cohort of families in New York City showed that subsidized housing was the best predictor of residential stability after shelter living. The odds of stability were 21 times greater for families who received housing subsidies than for those who did not. Compared to the availability of affordable housing, mental or physical health problems did not appreciably cause family homelessness or impede later stability.[50]

This study suggests that a reinvestment in social housing by all levels of government is an important strategy for ameliorating the current crisis in both housing affordability and homelessness. It may also be one of the best ways to prevent homelessness in the first place.

As this chapter shows, Canadians have demonstrated a growing interest in and concern about issues related to the physical environment and its link to health. Policy-makers and leaders who are managing health risks in the environment need to be sure that the public is both informed and involved in the decision-making process. At the same time, groups working on different but related issues need to be encouraged to collaborate and build stronger alliances in the pursuit of common goals. As we have seen in this report so far, child health, environmental protection, consumer information and income distribution are inextricably linked.

While there are many unanswered questions concerning the physical environment, two areas stand out as particularly important for further research efforts. The first is a need to answer some broad questions related to the effects of environmental contaminants and changes on human health, especially as they relate to the health of children.

At the 1997 G-8 Denver Summit, the Declaration on Children's Environmental Health (of which Canada is an official signatory) identified seven areas of concern that require further study and information sharing in terms of policy and program solutions:

- increasing our understanding of the particular exposures and sensitivities of infants and children to environmental contaminants and exchanging information on relevant regulatory decisions and standards
- further reducing maternal and child exposure to lead
- ensuring microbiologically safe drinking water for all Canadian families
- reducing air quality threats
- reducing the exposure of pregnant women, children and youth to environmental tobacco smoke
- reducing threats to children's health from endocrine-disrupting chemicals
- reducing the impact of global climate change on children's health.[51]

The second related area for investigation concerns the potential impacts of environmental endocrine-disrupting chemicals on human reproduction functions. The recently announced Toxic Substance Research Initiative will help address this issue.[52]

Chapter 5 — Personal Health Practices

INFLUENCES ON PERSONAL HEALTH PRACTICES

Chapter 5 has demonstrated that income, education and culture, in some circumstances, have a powerful influence on personal lifestyle "choices". This suggests that information, health education and efforts to teach personal behaviour change skills are not enough. It also suggests that Canadians with low incomes need access to the resources and supports available to higher-income Canadians when it comes to active living, healthy eating and other personal health practices.

This chapter also illustrates the efficacy of broad policy and legislative approaches that change the environment around individuals. For example, increases in smoking behaviour among young people after taxes on cigarettes were reduced substantiate the well-known fact that youth tobacco use is extremely price sensitive.[51] The success of seatbelt (and, to some extent, bicycle helmet) legislation suggests that legislative strategies may be as effective as (and possibly even more effective than) health education in supporting behavioural change. Probably a combination of strategies would be most effective.

PRIORITIES FOR ACTION

As shown in *Chapter 1*, lung cancer cases and deaths due to lung cancer among women continue to increase. The trend toward increased smoking among girls in Canada foreshadows an epidemic of lung cancer in women 30 years from now, as well as substantially increased rates of heart disease if present rates continue. Why have strategies to reduce and prevent smoking among young people been less effective with girls than with boys? What are the factors in the surrounding environment that cause young women to smoke? What is the relationship between smoking, physical activity and young women's desire to be thin? It is time to ask these questions to young women themselves and to work with them to devise comprehensive strategies to reduce smoking behaviour.

While preventing smoking initiation altogether is most desirable, delaying the onset of smoking (for both sexes) has also been shown to be an important strategy. Starting to smoke at an early age (e.g. 15 or younger) is associated with heavy smoking and a lower probability of quitting in later life.[52] Thus, efforts to prevent or delay the initiation of smoking in preadolescence and early adolescence may be particularly important, especially among girls and in Aboriginal communities in which young people tend to begin smoking and tobacco use at very young ages.

The recent U.S. Surgeon General's Report on Physical Activity[53] has confirmed that increased levels of physical activity by all age groups can result in both health gains and reduced costs in the health-care system. Effecting a change in the level of activity among the inactive population stands to accomplish the most in terms of population health gains. Accordingly, the federal, provincial and territorial ministers responsible for fitness, recreation and sport set a goal of reducing the number of inactive Canadians by 10% by the year 2003. To achieve this goal, there will need to be a concerted effort to remove the barriers to active living among low-income, multicultural and indigenous groups. The factors most often cited as deterring low-income adults, children and youth from participating in sport, recreation and fitness activities include lack of time, cultural concerns, lack of motivation, and user fees. In view of the low activity levels of Canadian children, renewed efforts to bring quality daily physical activity into school programs also need to be supported.

The launching of Canada's Guide to Healthy Physical Activity provides an important opportunity to raise awareness and knowledge about the whys and hows of active living — much in the same way that Canada's Food Guide to Healthy Eating has helped to educate Canadians about healthy eating.

Encouraging Canadians to become more active is especially important in light of the increase in the number of Canadians who carry excess weight, and are therefore at increased risk for diabetes and heart disease. Efforts to promote healthy weights will need to combine three messages — active living, healthy eating and positive body image. These three behaviours are most likely to lead to healthy weights without increasing weight preoccupation among vulnerable groups.[54]

Efforts to increase active living will need to be sensitive to the fact that sun exposure is often greatest while engaging in activities associated with an active lifestyle. Reducing sun exposure for children can be accomplished by providing more shaded areas in public places and parks, scheduling outdoor events at hours outside midday, making hats and sunscreen available, educating parents and children about the need to wear sunglasses and training child and youth workers about sun safety (*see Chapter 4*).

The dramatic increase in the relationship between HIV/AIDS and injection drug use is a major concern. Injection drug use also accounts for the great majority of cases of hepatitis C infection, and is associated with a wide range of related health and social problems.

In the new millennium, the mobility of injection drug users and global access to injection drugs are likely to increase. Reducing HIV infection and other harms associated with injection drug use (IDU) is a complex issue that brings into play legal and ethical issues, as well as having major implications for the health and social service systems in each province and territory. A comprehensive plan to address this problem is required now. Strategies should take a harm-reduction approach, with the objective being to normalize the life of the individual, reduce criminal activity associated with injection drug use, reduce the incidence of IDU and unprotected sexual activity, and facilitate a return to employment. Further research is urgently required on this issue since the problem is complex and its magnitude and characteristics are not well documented.

Risk-taking behaviours among youth remain stubbornly high, and in many areas like tobacco use, binge drinking and cannabis use, they appear to be increasing. Of particular concern is the trend of a significant proportion of adolescents and youth engaging in hazardous combinations of multiple risk behaviours. Recent surveys show alarming rates of multiple risk behaviours among high school students. These rates pale in comparison, however, to those for out-of-the-mainstream youth and street youth.

In a recent review of research and consultation documents that captured young people's views, youth were critical of the nature of the information and the timing of their courses in sex education. Many wanted a broader approach that would include more exploration of topics like love, the positive aspects of sexuality and sexual preference. Youth in small communities expressed concerns about access to condoms and the lack of privacy and confidentiality in their environment.[55]

As noted in previous chapters, there are many reasons to be concerned about the health of Canada's young people, including high rates of abuse, poverty and unemployment; low rates of self-esteem and psychological well-being; and high rates of death due to fatal unintentional injuries and suicides. In an environment characterized by such powerful, negative determinants of health, the tendency of some youths to engage in risk behaviours is not surprising.

Since A New Perspective on the Health of Canadians first identified lifestyle behaviours as a primary determinant of health, many governmental and non-governmental programs have worked to change individual behaviours. This approach has worked for some — but less so for those lacking the requisite environmental, social and personal supports and resources. Efforts to educate individuals and build personal skills for change must now work hand-in-hand with efforts to structure an environment around the individual that supports healthy lifestyle decisions. Nowhere is this likely to be more important than with youth.

Chapter 6 — Health Services

QUALITY AND ACCOUNTABILITY

Chapter 6 shows that significant slowdowns in health services costs were achieved with little increase in unmet needs and without compromising overall measures of population health or the right of all Canadians to universally insured medical services. At the same time, public surveys showed an increasing discontent with the quality of services they

received. There was growing anxiety about the financial, physical and emotional stress placed on families, especially women, due to gaps in care, waiting times for institutional and community services, and the early release of sicker patients from hospital.

In order to make Canada's health-care system more responsible and accountable to the public, it is necessary to move toward an integrated, high-quality system that provides the care Canadians need in an effective and affordable manner. To do this, the system needs better measures of accountability using a range of indicators to track the outcomes and cost-effectiveness of medical interventions. Combining these measures with a set of indicators that report on the overall health of the population in a certain region, province or territory could be a powerful incentive for agencies inside and outside the formal health-care system to collaborate on common goals that will enhance both individual and population health.

ACCESS TO SERVICES

Canadians can be proud of the fact that income is not generally a barrier to universal medical services. The dramatic increase in mammography use is a positive example of how public education combined with efficient screening services can make a dramatic difference in the use of proven preventive measures. Yet large disparities in access to uninsured health services remain. More information on the age and sex of groups most affected by these inequities is needed.

Most Canadians would agree that dental care, vision care and counselling services are not "frills". For many, access to these services is essential to basic health and to leading a productive life in modern society. Yet many Canadians fall between the cracks: without private or publicly assisted insurance, they have restricted or no access to these services. Reducing this inequity needs to be a priority for policy-makers across the country. Whether this is achieved through the creation of universal access programs or the provision of specific support to Canadians without insurance for these services is a subject for discussion and debate.

HOME CARE AND COMMUNITY SERVICES

Advances in drug therapies that have made it possible for people to leave hospital earlier and changes in the nature of ailments for which people are admitted to hospital over the last 20 years suggest that the need for effective community health- and home-care services will continue to escalate in the next 20 years. Chronic conditions such as arthritis, nervous system disorders and the outcomes of stroke are best treated outside of an acute-care hospital, as long as community nursing and home-care support services are available.

The dramatic change in the length of hospital stay for childbirth also required community backup services. A 24- to 48-hour stay in hospital is appropriate for healthy mothers who have support at home. Without this help, however, new mothers may face problems such as breastfeeding difficulties, exhaustion and depression. In addition to the mother's suffering, these problems affect maternal-child bonding and can have long-term consequences for a child's emotional and mental development.

The National Forum on Health and other groups have recommended that home care and certain other community services be made insured services. This would ensure that all Canadians have access to an integrated continuum of care that includes services in health promotion and prevention, primary care, acute care, post-acute care, chronic care and access to services in the most appropriate, cost-effective settings, and due regard should be given to the burden on caregivers, many of whom are women.

The information presented in this report supports this notion. However, the literature on population health also suggests that services alone are not the answer to improving health. High-quality services must be supported by policies and programs in communities and workplaces that allow people time and opportunity to care for each other, without compromising their own health or financial security.

MEDICATIONS

The use of medication has increased dramatically over the last 20 years. The number of Canadians of all ages using more than three medications has risen significantly, including almost half of Canadians over age 75. In some respects, this is not surprising, considering the influx of new drugs that improve quality of life for older people with disabilities and the fact that many more Canadians are living past age 75, when the incidence of health problems requiring medication needs to increase.

There are, however, major concerns associated with multiple drug use, including increased risks for falls and hospitalization due to harmful side effects. In recent years, groups of older adults, pharmacists and organizations of health-care professionals have carried out major campaigns to educate both physicians and older Canadians about the dangers of multiple drug use. These efforts will need to continue. At the same time, more detailed data and analysis of this complex issue are required, including information on the use of more than three drugs and specific outcomes of this use.

Policy-makers need to pay close attention to the costs of prescription drugs. Two areas deserve particular attention. First, policy-makers who regulate payments and physicians who prescribe drugs will need to adopt a rational, evidence-based approach to the complex challenge of containing drug expenditures that is fully informed by and acceptable to consumers. To do this, more information on the links between increased spending on drugs and resulting cost savings in hospitals is needed. Secondly, as drug therapies become increasingly important in the treatment of illness, policy-makers must address the fact that some 25% of Canadians — mostly lower-income Canadians — may have restricted or no access to drug insurance.

Improving Health

REASON TO CELEBRATE

This report has shown that Canada has much to celebrate. Many Canadians enjoy high levels of health and Canada ranks well above other countries in most of the major indicators of population health. Canada's health-care system remains a source of pride for Canadians, despite major restructuring efforts in all jurisdictions. With the exception of certain population groups, health promotion and disease and injury prevention strategies have shown positive results in areas such as immunization, mammography, breastfeeding and car seatbelt usage.

At the same time, there is definitely room for improvement. The high standard of health experienced by many Canadians is not shared by all sectors of society. There are clearly disparities in health status associated with gender, age, socioeconomic status and place of residence. Some Canadians (especially children living in low-income families) are also more vulnerable to threats in the physical environment, including inadequate housing and exposure to damaging toxins.

Achieving complete equality in health status among all Canadians is an unrealistic goal. But achieving equitable or fair access to the opportunities and supportive environments all citizens need to be healthy is both a laudable and achievable goal in a civil, caring society. As this report has also shown, increased access to protective factors in the environment such as social support, safe communities, employment opportunities and advanced education can help to ameliorate some of the inequities in health status associated with living in low socioeconomic circumstances.

References

ENDNOTES FOR CHAPTER 1

57. Evans, R. *Why Are Some People Healthy and Other People Not? Canadian Working Paper Number 20.* Toronto: Institute for Advanced Research, Program in Population Health, December 1992.

58. Statistics Canada. "Deaths 1996": *The Daily*, April 16, 1998 (Statistics Canada Cat. No. 11–001–XIE). See Statistics Canada Internet site: **www.statcan.ca**

ENDNOTES FOR CHAPTER 2

57. Frank, J., Mustard, J.F. "The Determinants of Health from a Historic Perspective." Daedalus. *Journal of the American Academy of Arts and Science* (Fall 1994): 1-19.

58. Evans, R., Barer, M., Marmor, T. (eds.) *Why Are Some People Healthy and Others Not? The Determinants of Health of Populations.*

59. Wildinson, R.G. *Unhealthy Societies: The Afflictions of Inequality. London*: Routledge, 1996.

60. Messing, K. "Women's Occupational Health: A Critical Review and Discussion of the Issues." *Women and Health* 25, 4 (1994): 39-69.

61. Federal, Provincial and Territorial Advisory Committee on Population Health. *Strategies for Population Health: Investing in the Health of Canadians.* Ottawa: Minister of Supply and Services Canada, 1994.

62. Lee, C., Duxbury, L., Higgins, C. *Employed Mothers: Balancing Work and Family Life.* Ottawa: Canadian Centre for Management Development, 1994.

63. National Literacy Secretariat. *Creating a Learning Culture: Work and Literacy in the Nineties.* Ottawa: Minister of Supply and Services, 1990.

64. Betcherman, G., Leckie, N. *Youth Employment and Education Trends in the 1980s and 1990s.*

65. Human Resources Development Canada. *High School May Not Be Enough: An Analysis of the School Leavers Follow-Up Survey*, 1995. Ottawa: HRDC, 1998.

66. Canadian Council on Social Development. *The Progress of Canada's Children*, 1997.

67. United Nations Development Program. *Human Development Report* 1998. New York: Oxford University Press, 1998.

68. Wilkinson, R.G. *Unhealthy Societies: The Afflictions of Inequality.*

69. Kawachi, I., Kennedy, B. "Health and Social Cohesion: Why Care About Income Inequality?" *British Medical Association Journal* 314 (1997): 1037–40.

70 Statistics Canada, Canadian Centre for Justice Statistics. *Family Violence in Canada: A Statistical Profile*, 1998.

71. Wilkinson, R.G. *Unhealthy Societies: The Afflictions of Inequality.*

72. Marmor, T. "Improvement of Social Environment to Improve Health." *Lancet* 351 (1998): 57–60.

ENDNOTES FOR CHAPTER 3

68. Montréal Diet Dispensary. *111th Annual Report*, 1990–91. Montréal: Montréal *Diet Dispensary*, 1991.

ENDNOTES FOR CHAPTER 4

50. Shinn, M., Weitzman, B., Stojanovic, D., et al. "Predictors of Homelessness among Families in New York City: From Shelter Request to Housing Stability." *American Journal of Public Health* 88, 115 (November 1998): 1651–7.

51. Editors. "1997 Declaration of the Environmental Leaders of the Eight on Children's Environmental Health." *In What on Earth? A National Symposium on Environmental Contaminants and Children's Health. Canadian Journal of Public Health* 89, Supplement 1 (1998): 5–8.

52. Health Canada and Environment Canada. *Toxic Substances Research Initiative.* See Health Canada Web site: **www.hc-sc.gc.ca/main/web/ehp/tsri/index.htm**

ENDNOTES FOR CHAPTER 5

51. Chen, J., Millar, W. "Age of Smoking Initiation: Implications for Quitting." *Health Reports* 9, 4 (Spring 1998): 39–46.

52. Ibid.

53. U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General.* Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.

54. Health Canada. *Blueprint for Action: An Integrated Approach* (*VITALITY*). Ottawa: 1989.

55. Caputo, T. *Hearing the Voices of Youth: A Review of Research and Consultation Documents.* Prepared for Health Canada, March 1998

Perio REPORTS

Bimonthly publication designed for dentists and dental hygienists concerned about their patient's periodontal health. Each issue summarizes periodontal research of specific interest to clinicians. Easy to read format keeps you up to date on the latest research findings.

Journals reviewed for **Perio REPORTS** include:

Journal of Periodontology
Journal of Clinical Periodontology
Journal of Periodontal Research
Journal of Dental Research
Periodontal Abstracts
Quintessence International
JADA, JADHA

☐ Please send sample issue for my review

☐ $48 one-year ☐ $84 two-year

Name_____
Address_____
City _____Prov._____Postal Code_____

Mail to:
Perio REPORTS, P.O. Box 52090
311 - 16th Ave. NE, Calgary, Alberta T2E 8K9

Creating Practitioners for the New Century

Submitted by Patricia Covington, RDH, MSc, and Patricia Noble RDH, MEd

The Report of the PEW Health Profession Commission — October 1991 has identified 17 competencies that health professionals should meet by year 2005. Three of the competencies apply to recent changes made in the dental hygiene curriculum at the **College of New Caledonia** (CNC). They are: Assess and Use Technology Appropriately, Manage Information, and Continue to Learn. In 1996, a survey on information access by dental hygienists was carried out in Northern British Columbia. The results showed that dental hygienists in this area, who were primarily CNC graduates, were not making full use of new technology for information access. It was also becoming apparent to the dental hygiene faculty at CNC that students were not as skilled as they could be in accessing and evaluating information. Therefore a new course was proposed and approved by CNC's Education Council that included a major component on information access and evaluation.

This course, Professional Issues 1, is placed in the 1st trimester of the 1st year to better prepare students to complete literature searches, find appropriate Internet sites and evaluate information that comes from these sources. They also learn basic information about the profession, ethics and jurispudence. The course has now been taught twice and is being refined as faculty and students continue to learn.

The dental hygiene students enter the program with a variety of computer skills and abilities. Some students have virtually no experience while others have utilized the Internet extensively, which does make teaching the course challenging. A variety of course activities are intended to level the playing field among students and to facilitate better access and use of information for future assignments.

Students are required to attend a library orientation session where they are introduced to databases such as Index to Dental Literature, Medline, CINAHL, and HealthStar that are accessible through the CNC library or their home computer. Students are required to obtain an e-mail address and if they are unfamiliar with e-mail, they must attend a library information session. One assignment of the course requires that they communicate with the course instructor or classmates on a program related topic a total of five times via e-mail. A two hour computer lab session is scheduled to teach the students the basics of Internet searching. This session is co-taught with the reference librarian, and students who are more familiar with the Internet are encouraged to tutor their classmates. Using these new skills, students are required to evaluate four dental Internet sites, of which two are assigned and two are discovered. Students also carry out a literature search of the various databases on an assigned topic. While a paper on the topic is not written at this time, students must submit a reference list according to APA style. To help students and the faculty assess the amount of learning that has taken place, a pre and post assessment of learning exercise is also carried out.

While the course does create some anxiety for many of the students, in the end they all make progress in the areas of information access, management and evaluation. Assignments that build upon these skills are required in later courses in the program. The faculty at CNC are confident that the students are gaining better skills in this area and this is critical to their ability to continue to learn after graduation. After all, it is no longer possible to teach the students all they need to know in a two year curriculum, instead, students must learn how to learn.

TITLE: PROCEEDINGS OF THE EUROPEAN WORKSHOP ON MECHANICAL PLAQUE CONTROL

Authors:
Niklaus P. Lang, University of Berne
School of Dental Medicine, Berne, SWITZERLAND

Rolf Attström, Lunds University
Denter of Health Sciences, Malmö, SWEDEN

Harald Löe, University of Berne
School of Dental Medicine, Berne, SWITZERLAND

ISBN: 3-87652-428-8
Publication Date: November, 1998
Pages: 314
Illustrations: Over 100 Tables & Charts
Format: Softcover
Indexed: No
Price: $42.80

Subject Category: Periodontics, Preventive Dentistry

Primary Audience: Periodontics, Dental Hygienists, General Practitioners, and Dental Students

Publisher: Quintessence Verlang, Berlin; 1998

Recent European workshops (1993, 1996) addressed the evidence base for the clinical practice of periodontics, and the use of chemotherapeutics in subgingival plaque control. However, supragingival mechanical plaque control had not been addressed since the National Institute of Dental Research (NIDR) workshop in 1985. This book revisits mechanical oral hygiene practices and their efficacy in relation to primary and secondary prevention and therapy for dental caries and periodontitis.

In May 1998, the 4-day workshop at Berne, Switzerland, consisted of four sessions in which working papers were reviewed, discussed, and amended. Each session group prepared a consensus report. These four reports were discussed and approved by all of the participants. Policy statements regarding the importance of mechanical plaque control as a key issue for the prevention of oral diseases were developed and endorsed.

Names and addresses of the participants are conveniently listed providing the reader the means to contact any of the individuals if further information or discussion is sought.

The text is presented in the same logical format in which the workshop was organized. The four key sessions are the main headings:

Session A:
Epidemiology and Etiology of Periodontal Diseases and the Role of Plaque Control in Dental Caries.

Session B:
Role of Mechanical Dental Plaque Removal in Prevention and Therapy of Caries and Periodontal Diseases

Session C:
Costs and Benefits of Mechanical Plaque Control

Session D:
Behavioural Aspects of Mechanical Plaque Control

The individual workshop papers are listed under these headings in the table of contents for easy reference. Policy Statements are noted at the end of the book.

The publication is an excellent comprehensive report providing information and scientific evidence regarding the role of plaque in dental caries and periodontal diseases. It presents a selection of current index systems that have made significant contributions to epidemiological research. The value, efficacy and safe use of various mechanical aids for plaque control on specific areas of the teeth are outlined. Traditional plaque removal aids, and some thought provoking new designs for plaque removal devices are presented and compared. Motivating factors impacting oral health as well as risk factors and health promotion are examined.

The reader is guided through the present-day oral health philosophies. The text reflects the current shift from the Disease and Treatment Paradigm to that of Disease Prevention and Health Promotion as outlined in the Ottawa Charter for Health Promotion (1986). Evidence-based client care is supported. The necessity of individual client care is reinforced as well as the importance of the client to assume the responsibility of oral health practices. The need for professionals to become involved in health policy formation is also stressed.

Tables and graphs are appropriately placed to complement the material, although the use of colour to assist in data interpretation would have enhanced the publication particularly where shaded graphs were used.

In addition to content — the organization, easy referencing and diagrams, make this book a valuable tool for academics, dental professionals, researchers and students alike. Learning institutions particularly would find it a benefit, since it presents current clinically-proven concepts, which augment and contribute to oral health.

Respectfully submitted,
Ursula Pelissero, RDH
Faculty Preventive Dentistry
Niagara College Dental Programs

11TH ANNUAL CDHA CONFERENCE

BROADENING OUR
PROFESSIONAL HORIZONS

11TH ANNUAL CDHA PROFESSIONAL Conference

THE VICTORIA CONFERENCE CENTRE
VICTORIA, B.C.
JUNE 9TH–11TH, 2000

Thursday June 8th 1:00 pm – 4:30 pm
Dental Hygiene Educators Canada Workshop followed by a wine and cheese reception.

Friday, June 9th 8:30 am – 11:30 am — *Pre-Conference*

"Opening Doors to Residential Care" — A Panel Discussion:

Susan Nye, Yvonne Smith, Maxine Borowko, Dianne Stojak, Fern Hubbard, and Anita Vallee

Discover how B.C. dental hygienists opened doors to deliver care in long term care facilities! In 1999, B.C. dental hygienists achieved the goal of providing direct care to residents in facilities without a dentist's examination in the previous 365 days. The panel will discuss the process of delivering oral care in residential facilities, examine the barriers along the way and will look at the delivery of residential care from various viewpoints. One of the presentation highlights will feature the experiences of a Vancouver Island dental hygienist that has had a positive impact on care delivery in her community.

Strategies for Achieving Self-Regulation presented by The Federation of Dental Hygiene Regulatory Authorities

Friday, June 9th 12:30 p.m.-1:30 p.m. — Opening Ceremonies

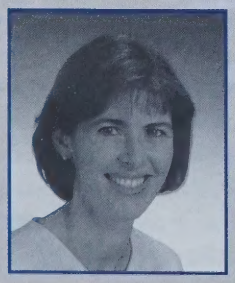
Martin Collis

Martin Collis Ph.D.

Keynote Address: Healing, Humour and High Level Wellness

"Some speakers want an hour of your time, I want a piece of the rest of your life!" Renowned speaker, author and entertainer on the subject of health and wellness, Dr. Martin Collis' dynamic performance will get you motivated to be your personal best. Using music, comedy and a unique perspective on human performance, Martin's presentations will get you ready for your next professional challenge!

Sonja Leziy



Dr. Sonja Leziy

Y2K Compatible Periodontics:
Bringing Periodontal Therapy into the New Millennium

Our goal as health care providers is no longer only to slow the rate of disease progression, but also to regenerate lost periodontal tissues or improve upon an acceptable esthetic and functional situation. The role of the periodontist has changed significantly from a purely resective or sanitative approach to a role involving reconstruction through soft tissue and bone regeneration and implant-supported prostheses. This lecture will review the latest instruments, techniques and materials employed in periodontal therapy. Dr. Leziy will discuss the dental hygienist's role in recognizing periodontal disease, its consequences and current treatment modalities.

Sharon Melanson

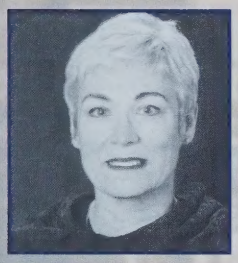
Baby Bottle Tooth Decay Among First Nations: Taking a Culturally Sensitive Approach

This innovative baby basket loan project was designed in response to the high incidence of baby bottle tooth decay within the First Nation population. By re-introducing a traditional comforting practice, a culturally acceptable alternative is offered; reducing dependency on the bottle. A handmade birch bark baby basket, made during the project, will be on display. .Sharon will share insights she has gained working with this group. The "Splats'in Baby Basket Loan Project" was the recipient of the CDHA/Colgate Community Health Grant for 1999.

You're Invited!

Lynda McKeown, CDHA President, invites everyone to attend the President's Reception at the world famous Royal British Columbia Museum. Meet with CDHA corporate sponsors & enjoy BC wine and delicacies native to the West Coast. Stroll through the cobbled streets of Old Town, or relax at the Homestead. Dine amidst masterpieces of art and ceremony at the First Peoples Gallery. Experience BC's rich history in a relaxed and memorable atmosphere.

Margaret Walsh



Margaret Walsh RDH, MS., Ed.D.
Professor, Department of Dental Public Health and Hygiene, University of California at San Francisco

Human Needs Theory and Tobacco Cessation: The Role of the Dental Hygienist

Dr. Walsh, co-editor of the textbook Dental Hygiene Theory and Practice will provide an update on dental hygiene human needs theory. Dr. Walsh will help you assess your client's readiness to change. She will show you how to incorporate tobacco cessation techniques into your practice and how to work with your clients to improve their oral health. The sessions will include issues such as behavioral techniques and pharmacological treatment and the role of self-help in enhancing tobacco cessation.

Peter Bennet

Dr. Peter Bennett, Naturopathic Physician, Certified Acupuncturist, and Board Certified Homeopath

Session 1: Oral Manifestations of Nutritional Disease

Session 2: Nutritional Medicine and Dentistry

Researchers and clinicians in nutritional medicine have repeatedly shown that the oral cavity is one of the best locations of the body to evaluate vitamin and mineral deficiencies. Dr. Bennett will present a brief historical review of oral nutritional medicine followed by some practical examples commonly found during clinical care provided by dental hygienists.

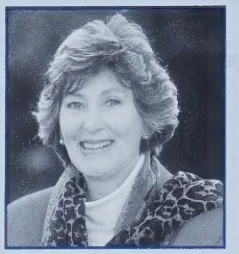
Marilyn Goulding

Marilyn Goulding, RDH, BSc, MOS

Zeroing in on Site-specific Therapies

Periodontal diseases have been shown to be site-specific and episodic. Initial therapy always includes thorough scaling and root planing. However, evaluation appointments often end in frustration as the dental hygienist struggles with alternative therapies for troublesome, non-responsive sites. Antibiotic therapy (by referral dentists) has shown mixed results with the effects being short-term. Given the recurrent nature of these infections, researchers began (in the '70's) to invesigate local delivery alternatives to avoid the systemic drug pitfalls of sensitivity and resistance. This session will take you on a tour along the development of local delivery choices and will describe the new alternatives currently underway. This discussion will be most pertinent to dental hygienists currently working in a periodontal setting open to non-surgical alternatives.

Barb Heisterman



Barb Heisterman, Dip.DH., EDH

"Who Generated the Boom?"

Ms. Heisterman will lead a discussion of the oral health needs of the elderly population, with a specific emphasis on those with multiple chronic disabilities. Who are they? Are we as Dental Hygienists ready, willing and able to meet the challenge?

Peggy McCann

Peggy McCann, B.Sc., M.A. — A Movement Education Specialist and Director of BACK IN ACTION Health Education Services Ltd.

"Ergonomics and the Dental Office"

The best prevention is knowledge. Peggy will discuss common ergonomic risk factors, the demands of the job, how one performs one's work (personal body mechanics, positive or negative work habits), and practical changes that can be implemented to prevent injuries.

Second Canadian Symposium on Dental Hygiene Practice and Entrepreneurship

Dental hygienists from across Canada are invited to a panel discussion on freestanding dental hygiene clinics, mobile dental hygiene practices, long term care facility oral health care legislation in B.C., dental hygiene newsletter publishing and other dental hygiene-related "for profit" ventures. Ample time will be allowed for discussion and questions.

CDHA Town Hall Forum

Meet with CDHA President Lynda McKeown to discuss dental hygiene issues, and contribute member suggestions for CDHA planning.

Joanne Clovis

Joanne Clovis, Dip.DH., B.Ed., M.Sc.

Partnerships to Prevent Oral Cancer

Ms. Clovis will give the audience an overview of contemporary concerns about oral cancers. She will present current evidence regarding the knowledge, opinions and practices of the health professionals who play a critical role in primary and secondary prevention. Strategies and techniques will also be illustrated that you, other health care providers, and your clients can practice to prevent and detect oral cancers.

Shafik Dharamsi

Promoting Oral Health Care in Developing Countries : Opportunities to Serve"

An increasing number of dental professionals are participating in volunteer opportunities to provide dental care in developing countries. Volunteering can bring immense personal satisfaction and a sense of social responsibility. Moreover, it can be more than a short-term tooth extraction expedition. Effective volunteerism can bring sustainable change to a community and help people take control over their own health. This presentation will focus on the state of oral health in many developing countries, the information you will need to develop an oral health promotion program, and the presenter's personal experiences working in Central and South East Asia.

Bonnie Craig, Dip.DH, M.Ed.

The Interface Between Dental Hygiene Education and Computer Technology : A Case Study in Partnerships

Community Connections 2000

A networking and information sharing opportunity for dental hygienists interested in community health issues. The session will consist of mini-presentations (10 minutes maximum, followed by 5 minutes for questions) by colleagues who want to share ideas, resources and innovative program approaches related to community health issues. Visual displays are also encouraged. Come and "Connect" as either a presenter or attendee.

Martin Collis, Ph.D.

Closing Address and Closing Ceremonies

CDHA Conference Marketplace

Marketplace is an opportunity for dental hygienists to share their interests, hobbies, and enterprises. A limited number of tables will be available for a small fee. If you wish to book a table to display or sell items, please contact **Lynne Viczko** by e-mail at **lviczko@vanisle.net** or by phone at **(250) 475-3201**.

Accommodation

Rooms have been reserved at *The Empress Hotel, The Clarion Grand Pacific Hotel, The Chateau Victoria and The Executive House Hotel.* **These rooms will be held until May 1, 2000 only. Please reserve early.** To find out more about hotel rooms, see the enclosed registration form or visit the CDHA web site at **www.cdha.ca**. Here you will find links to the hotel web sites, where you can view rooms and find entertainment options and activities in Victoria.

Saturday Night Events: A Feast for Body and Soul

Come dine at the world-renowned Empress Hotel, followed by the music and showmanship of the TIMEBENDERS. As they perform music from the 50's, 60's and 70's, they'll have every hand clapping and every toe tapping. Canada's good time gurus of rock and roll will impress you with costumes, high energy, lots of audience participation and impressions of the Beatles, Elvis, Roy Orbison and more! It's an evening to kick off your shoes and kick up your heels.

See you there!

11TH ANNUAL CDHA CONFERENCE — VICTORIA

PARTNERSHIPS IN HEALTH 2000 PROGRAM AT A GLANCE

FRIDAY, JUNE 9

	THEATRE	SALON A AND B	OAK BAY 1		
8:30	Residential Care		Strategies for		
9:00	Hygenist Panel:		Achieving Self-Regulation		
9:30	Break		Break		
10:00	Panel cont'd		Federation of Dental		
10:30	Opening Doors to		Hygiene Regulatory		
11:00	Residential Care		Authorities		
11:30	Break				
12:30	Opening Ceremonies				
1:00					
1:30	Dr. Martin Collis				
2:00	Healing, Humour and				
2:30	High Level Wellness				
3:00	Exhibitors/Break in Salon A and B		OAK BAY	SIDNEY	
3:30	Dr. Sonia Leziy	Commercial Exhibitors	Dentinal Sensitivity	Sharon Melanson	
4:00	Y2K Compatible	open until	and Desensitization	Baby Bottle Tooth Decay	
4:30	Periodontics	6PM		Sherry Saunderson	
5:00				Louanne Keenan	

SATURDAY, JUNE 10

	THEATRE	SALON A AND B	SAANICH 1	OAK BAY 1&2	ESQUIMALT
8:30	Margaret Walsh	Commercial Exhibitors	Dr. Peter Bennett	Marilyn Goulding	Debbie McCloy
9:00	Human Needs Theory		Oral Manifestations	Zeroing in on	Cyclosporin
9:30	and Tobacco Cessation		of Nutritional Disease	Site-Specific Therapies	and Arthritis
10:00	Exhibitors/Break				
10:30			Dr Bennett - Nutritional		Barb Heisterman
11:00	Margaret Walsh cont'd	Commercial Exhibitors	Medicine and Dentistry	Marilyn Goulding cont'd	Who Created the Boom?
11:30	Lunch at 12:00 in Salon A and B – Exhibits open until 3PM in Salon A and B				
2:30					
	THEATRE	SIDNEY	SAANICH 1	OAK BAY 1&2	ESQUIMALT
2:30	Margaret Walsh	Peggy McCann		Marilyn Goulding	2nd BC
3:00	*repeat*	Ergonomics and the		*repeat*	Symposium on
3:30		Dental Office			Dental Hygiene
4:00	Break				
4:30	Margaret Walsh cont'd			Marilyn Goulding cont'd	Practice and
5:00					Enterpreneurship

SUNDAY, JUNE 11

	THEATRE	LANGFORD/METCHOSIN	SAANICH 1	OAK BAY 1	ESQUIMALT
8:00				CDHA Town Hall	
9:00	Joanne Clovis		Shafik Dharamsi	Bonnie Craig	Community
9:30	Partnerships to Prevent		Promoting Oral Health	DH Education and	Connections
10:00	Oral Cancer		Care in Developing Countries:	Computer Technology	
10:30			Opportunities to Serve		
11:00	Break				
11:30	Closing Ceremonies				
12:00					
12:30	Dr. Martin Collis				

Mechanical and Antimicrobial Therapy: Roles in the Treatment of Periodontal Disease

By Dr. Murray Arlin DDS, Dip. Perio., FRCD (C)

Introduction

Recently, there has been an apparent increased interest in employing various antimicrobial agents to treat Periodontal Disease. The modes of drug delivery, suggested agents and indications for treatment have varied. This article will discuss mechanical and antimicrobial therapy, and in particular a product that is a controlled release local delivery system called "Atridox"*. This product has been approved in the United States and Europe, and Canadian approval is anticipated shortly.

Mechanical and Antimicrobial Therapy

Periodontal disease is an infection of the periodontium. Extensive research and clinical experience has shown that suspected periodontal pathogens are susceptible to mechanical removal. Traditional techniques of mechanical removal have included non-surgical (e.g. scaling and root planing), and surgical (eg. open flap debridement) therapies.

The issue of "Mechanical versus Antimicrobial" therapy boils down primarily to the need for the removal of: "Calculus and Microbial Plaque versus Pathogenic Microbial Plaque" (i.e. based on their relative importance in the etiology of Periodontal Disease).

Mechanical debridement aims to remove both plaque and calculus deposits while antimicrobial therapy targets the susceptible micro-organisms. The question then arises: If significant subgingival calculus is left on the root surfaces, what will the benefit of antibiotic therapy be? Listgarten et. al. Have shown that once a systemic antibiotic regimen is discontinued, pathogenic bacteria quickly return.[1] Definite calculus removal and good plaque control however can delay the return of pathogenic bacteria. As well, research indicates that it is not actually calculus, but rather microbial plaque (always present on/in the calculus) that is the source of periodontal pathogenic bacteria. Therefore if calculus remains, so does the microbial plaque. One may conclude that thorough calculus removal should be a prerequisite to the long-term control of the subgingival microbial plaque.

Additional arguments against using systemic antimicrobial therapy as an alternative to thorough mechanical therapy include; a) research showing equal or better results being achieved with conventional mechanical therapy, b) minimizing the use of antibiotics and the potential bacterial resistance that may result due to over-usage, c) mechanical therapy can remove calculus which can harbor endotoxins, d) mechanical therapy can remove calculus retentive factors which can serve as a nidus for plaque accumulation and, e) mechanical therapy can disrupt and remove the biofilms which may be impervious to insufficient concentrations of antimicrobial therapy.

> "The issue of "Mechanical versus Antimicrobial" therapy boils down primarily to the need for the removal of: "Calculus and Microbial Plaque versus Pathogenic Microbial Plaque"

An additional serious concern with inadequate subgingival calculus removal, with or without antimicrobial therapy, is that this may cause "disease masking". Disease masking commonly occurs following non-surgical treatment, where there is ineffective removal of calculus in the apical aspect of the pocket, especially when combined with more complete removal of coronal calculus. The result is that the clinician and patient can be deceived into believing that the treatment was successful, possibly delaying additional needed treatment, which may lead to additional attachment loss. The astute clinician should see the signs and symptoms that indicate unresolved disease, including;

1) residual inflammation
2) marginal bleeding
3) bleeding on probing
4) suppuration on probing

5) acute periodontal exacerbation
6) absence of crestal lamina dura, and
7) loss of attachment.

The treatment of unresolved disease should primarily involve the thorough removal of residual subgingival calculus and predisposing factors. In fact, the most appropriate timing of antibiotic therapy may be following thorough removal of calculus and calculus retentive factors, and even then only in selected situations. The early diagnosis of unresolved disease and disease masking is the critical initial step which then allows the therapist to develop an appropriate treatment plan and therapy. However, diagnosis and modulation of treatment must be ongoing because of the episodic nature of periodontal disease. For example, the clinician must recognize the limits of non-surgical therapy (which may include scaling and root planing and antimicrobial therapy) and institute open flap procedures when indicated to remove significant residual calculus. The threshold level of residual subgingival calculus that would be compatible with health cannot be accurately quantified. Therefore the clinician must strive to be as thorough as necessary in order to arrest disease, and as well institute a supportive periodontal maintenance care program.

In summary, there may be a serious misconception amongst some clinicians and patients that subgingival periodontal treatment should be directed towards only the microbial plaque, even in cases where there remains significant residual subgingival calculus. Evidence based, contemporary periodontal therapy however, strongly suggests that the primary periodontal treatment be directed towards mechanical debridement techniques in order to remove calculus (and calculus retentive factors) as well as microbial plaque.

On the other hand, local antibiotic delivery has potentially positive features in that it may:

a) be technically easier to perform
b) take less time
c) be applied comfortably for patients
d) spare cementum with potential less post treatment thermal sensitivity
e) potentially reach pathogenic microorganisms that have invaded the sulcular tissues
f) deliver a very low systemic dose, minimizing the potential for bacterial resistance, and
g) achieve higher drug concentrations in the sulcus compared to systemic administration.

Local Drug Delivery: Important Characteristics

The potential success of any drug therapy is dependent upon the agents to:

1) inhibit or kill the pathogen
2) reach the targeted site (ie. base of the pocket)
3) be maintained at a sufficient concentration
4) be retained at the target site long enough (ie. substantivity) to achieve the desired effect, and
5) not do any harm.

With locally applied agents, the delivery system in particular is important because of the turnover of gingival fluid and its ability to flush the contents out of the pocket within minutes. Various local drug delivery systems and their potential beneficial characteristics are summarized in Table 1.

The potential advantages of controlled delivery systems compared to other delivery systems are:

1) better patient compliance
2) enhanced pharmo-kinetic result
3) better localization of the agent
4) better control of drug dosage, and
5) prolonged drug delivery at high concentrations (which may be especially important in the periodontal lesions because subgingival plaque tends to organize as "biofilms" which require higher antibiotic concentration in order to allow the antibiotics to penetrate).

Atridox is a subgingival controlled release product composed of a two syringe system. Syringe "A" contains 450 mg. of a polylactic acid gel, which is a bio-absorbable. Syringe "B" contains Doxycycline Hyclate powder which is equivalent to 42.5 mg. of Doxycycline (Atridox is a registered trademark of Block Drug Corporation). The contents of the 2 syringes are mixed together and applied subgingivally. The flowable material conforms to the anatomy of the pocket and sets to a gel-like consistency upon contact with the gingival crevicular fluid. Material absorption occurs over several weeks, however, it can be removed one week after initial placement.

Table 1.

DELIVERY SYSTEM →	Mouthrinse	Subgingival Irrigation	Systemic Delivery	Controlled Delivery
Reaches the Site of Disease	Poor	Good	Good	Good
Adequate Concentration	Good	Good	Fair	Good
Adequate Duration	Poor	Poor	Good	Good

Atridox Clinical Studies

Atridox was evaluated for safety and efficacy in two well-controlled, parallel-design, multicenter, 9-month clinical trials, involving a total of 831 patients with moderate to severe adult periodontitis. Patients were divided into four groups, and received either Atridox plus oral hygiene, SRP plus oral hygiene, placebo gel plus oral hygiene, or oral hygiene alone. All sites with probing depths greater than or equal to 5mm were treated at the start of the study, and then four months later. After nine months, the reductions in probing depth and increases in attachment level for Atridox and SRP were equivalent (1.2mm and 0.8mm respectively). For placebo and oral hygiene alone, the reductions in probing depth and increases in attachment level were 0.9mm and 0.3mm for placebo gel, and 0.7mm and 0.4mm for oral hygiene respectively.

Obviously, with Atridox being a newly introduced therapy, there are no long-term clinical data yet available. However, Atridox was approved for the use in the USA for the treatment of chronic adult periodontitis for a gain in clinical attachment, reduction in probing depth, and reduction in bleeding on probing. Also, Atridox is the first and only locally delivered antimicrobial to have received the Seal of Acceptance of the American Dental Association.

Potential Indication for Clinical Usage of Atridox

As with any new product, research is limited. Additional research for example is needed to determine use of Atridox as a treatment not only for Chronic Adult Periodontitis, but for situations such as; smokers, peri-implantitis and all types of periodontal disease other than chronic Adult Periodontitis.

With further research and clinical experience, additional clinical situations may be found where use of Atridox may prove to be a valuable adjunct to conventional periodontal therapy. Below is a summary of clinical situations where (strictly in the opinion of the author) Atridox may be considered in the future. Readers are reminded, however, that at the present time, the only approved indication for Atridox in the US is:

1) For use in the treatment of Chronic Adult Periodontitis for a gain in clinical attachment, reduction in probing depths, and reduction of bleeding on probing. Other potential clinical indications (though not yet substantiated with published data) may include;
2) As an initial treatment option in dental phobics, or patients who refuse mechanical therapy,
3) Medically compromised patients who cannot undergo mechanical therapy,
4) As a treatment in sites that have not responded to traditional mechanical therapy, eg. during initial and/or periodontal maintenance therapy,
5) Areas of recurrent disease,
6) In esthetically critical areas, where there is a concern that mechanical therapy would be more likely to result in unacceptable recession,
7) Areas that are inaccessible to mechanical therapy — eg. deep narrow tortuous pockets, deep furcation areas, peri-implant defects, etc.
8) As an adjunct to mechanical therapy in patients who have declined periodontal surgery that would minimize probing depth and inflammation,
9) Periodontally compromised patients where extensive inflammation may be reduced with antimicrobial therapy to facilitate the mechanical therapy that would follow after.

Conclusion

Atridox presents a user-friendly and patient friendly treatment that has many promising indications. Antimicrobial therapy, however, should not be considered as a substitute to conventional mechanical periodontal therapies.

D-Sharp
DENTAL INSTRUMENTS

Bringing your Dental Instruments Back to Life

Well-maintained instruments increase practice productivity, offer better patient comfort and are essential for superior dental care. At D-Sharp, we offer a complete Dental Instrument re-sharpening and re-tipping service. We recondition your old, worn-out or broken instruments by putting a brand new end on your existing handle. By using the identical grade of high-quality carbide stainless steel, we ensure the same performance offered by the original instrument. Instruments we service include:

- *explorers*
- *probes*
- *scalers*
- *curettes*
- *perio files*
- *carvers*
- *excavators*
- *pluggers & burnishers*
- *plastic & packing instruments*
- *cavity preparation instruments*
- *elevators and more!*

We are also able to customize any instrument to your specific needs. We provide all these benefits while reducing your operating costs.

For more information, please contact us at:
1834 Hobson Drive
Burlington, ON L7L 6L7
www.d-sharp.com
1 (877) 8DSHARP (837-4277)
inquiries@d-sharp.com

Toronto • Calgary • Vancouver

DENTAL ABSTRACTS VOLUME 44 #4 JULY/AUG. 1999

Occupational Risk
Update on Hepatitis Viruses A, B, C, D, E, and G

Dental Abstracts is a new section of the Probe Journal highlighting a partnership with CDHA and the Journal of Dental Abstracts. All articles are printed with permission of Dental Abstracts. For more information and subscription rates, contact (314) 453–4351 or visit www.mosby.com/periodicals

Introduction

Viral hepatitis can be caused by six different hepatitis viruses. The prevalence, transmission, prevention, and dental-practice considerations of hepatitis viruses A, B, C, D, E, and G are reviewed.

HEPATITIS A VIRUS

Hepatitis A virus (HAV) is transmitted via feces, and many cases are associated with household, sexual, or daycare-center contact. An estimated 125,000 to 200,000 infections occur each year in the United States. The clinical course is often self-limiting and full recovery is common. HAV immune globulin and the HAVRIX and VAQTA vaccines can prevent infection, but routine immunization of dental health care workers (HCWs) is not indicated. Those traveling to developing countries as dental volunteers or tourists should be immunized, however.

HEPATITIS B VIRUS

Hepatitis B virus (HBV) is transmitted via sexual contact and percutaneous or permucosal exposure. Prevention with recombinant vaccines (Recombivax HB, Engerix-B) is important because chronic infection develops in 5% to 10% of infected adults, 25% to 50% of young children, and 90% of infants; the case fatality rate in the United States is 0.5% to 1%. HCWs at risk of HBV exposure must be offered HBV vaccination within 10 days of starting work. HBV immune globulin should be administered after an occupational exposure incident. Patients with HBV are treated with interferon-α.

HEPATITIS C VIRUS

Hepatitis C virus (HCV) produces chronic infection in 85% of patients, increasing their risk of serious liver diseases. Almost 4 million Americans are believed to be infected with HCV. Percutaneous exposure to infected blood is the primary transmission route, but permucosal and sexual transmission have also been documented. Between 0% and 10% of those exposed to HCV through needle-sticks will seroconvert. Following an occupational exposure, the source person and the HCW should be tested for HCV. No vaccine or postexposure prophylaxis is available, but chronic HCV infection is treated with interferon-α, sometimes in combination with ribavirin.

HEPATITIS D VIRUS

Some patients with HBV are also infected with hepatitis D virus (HDV), which cannot survive in the absence of HBV. HBV-HDV co-infections increase the risk of fulminant hepatitis over HBV infection alone. HDV's prevalence in the United States is low, paralleling the low rate of chronic HBV. Most U.S. cases are in injectable-drug users and hemophiliacs. Dental HCWs face a very low risk of HDV infection because of their high rate of HBV vaccination. HDV treatment is difficult and relapse is common.

HEPATITIS E VIRUS

Like HAV, hepatitis E virus (HEV) is transmitted via a fecal-oral route, but in the case of HEV, transmission is usually through contaminated drinking water in developing countries. The clinical course of HEV is self-limiting, but the case fatality rate is high (0.5% to 3%). Because no vaccine exists yet, those who travel to HEV-endemic areas should avoid consuming water, ice, raw fruits and vegetables, and uncooked shellfish.

HEPATITIS G VIRUS

The newest hepatitis virus, hepatitis G virus (HGV), was discovered in 1995. HGV is bloodborne and often occurs as a co-infection with other hepatitis viruses. Its overall prevalence is unknown because no simple screening test is available yet, but HGV has been detected in 32% of HBV-infected patients and 1% to 2% of blood donors. HGV may be transmissible through percutaneous and perinatal exposures to blood.

Practice Consideration

Adherence to standard infection-control procedures reduces the risk of occupational transmission of hepatitis viruses. HBV vaccination of dental HCWs is also important. Post-exposure protocols set forth by the U.S. Public Health Service should be followed when exposure incidents occur. The Centers for Disease Control and Prevention has published recommendations on practice restrictions for HBV-infected HCWs, but there are no HCV recommendations yet.

Clinical Significance

Of the six different hepatitis viruses that have been identified, dentists should be most concerned with the hepatitis B, C, and D viruses. HBV vaccination and infection-control measures offer dental staff the most protection.

Gillcrist JA: Hepatitis viruses A, B, C, D, E and G: Implications for dental personnel. *J Am Dent Assoc* 130:509–520, 1999

Reprints available from JA Gillcrist, Oral Health Services Section, Tennessee Dept of Health, Cordell Hull Bldg, 426 5th Ave N, Nashville, TN 37247

Periodontics: Understanding the Pathogenesis of Periodontal Diseases

Objective

The American Academy of Periodontology's Research, Science, and Therapy Committee prepared an informational paper on the pathogenesis of periodontal diseases. The paper is intended to review the current knowledge on pathogenesis to help dentists understand the underpinnings of new diagnostic and treatment methods.

GINGIVITIS

Plaque bacteria induce pathologic changes in gingival tissues, causing gingivitis. The initial inflammatory response — which involves vascular changes, epithelial cell changes, and collagen degradation — likely results from bacterial products' vasodilatory effects, host system activation, and attraction of neutrophils by bacterial constituents. Many systemic diseases can also be associated with gingival inflammation, resulting from vascular alterations, cellular infiltration, defective host responses, hormonal changes, and altered microflora. Drugs may also induce hyperplasia when plaque is present.

PROGRESSION

It is not clear why some gingivitis lesions progress to periodontitis, which involves attachment loss and migration or epithelial attachment. To understand the pathogenesis of periodontitis, researchers need to develop ways of differentiating between active and quiescent periodontal disease.

BACTERIAL VIRULENCE

Although periodontal pathogens must be present in sufficient concentrations to cause disease, bacterial virulence also influences pathogenesis. To cause disease, bacteria must be able to colonize periodontal sites, evade host defense mechanisms, and produce substances that initiate tissue destruction. Although little is known about events leading to the initial breakdown of the neutrophil barrier between plaque and tissue, much is known about bacterial mechanisms for breaching this protective barrier.

TISSUE DESTRUCTION

When plaque bacteria reach sufficient numbers, tissue destruction may ensue. Bacteria may act directly on the periodontium by inducing an inflammatory response or by producing enzymes that degrade tissues. Indirect effects include a variety of host-mediated destructive processes involving polymorphonuclear leukocytes, monocytes, lymphocytes, and fibroblasts. When the subgingival bacteria have established a predominantly anaerobic, gram-negative infection, host cells release cytokines and inflammatory mediators, including interleukin 1, interleukin 6, interleukin 8, tumor necrosis factor-α, and prostaglandin E_2. These cytokines stimulate inflammatory responses, bone resorption, and collagen destruction.

GENETIC FACTORS

Genetic make-up influences a host's susceptibility to periodontal disease. A polymorphism in the gene that encodes interleukin 1 is associated with periodontitis severity and susceptibility. There is some evidence that risk for rapidly progressive periodontitis and juvenile periodontitis (both localized and generalized) may be genetic. Generalized prepubertal periodontitis is also found to occur in families with early-onset periodontitis, suggesting similar causes and pathogenesis.

SMOKING

Smoking is a risk factor for periodontitis. Smoking may alter periodontal tissue vasculature, inhibit immunoglobulin levels and antibody responses to bacteria, and alter the bacterial microflora.

SYSTEMIC DISEASES

Defective neutrophil function is associated with many of the systemic diseases that predispose patients to periodontal disease; this emphasizes the importance of the neutrophil in protecting periodontal tissues. Diabetes mellitus involves not only impaired neutrophil function, but also microvascular changes and altered collagen metabolism; these factors may contribute to diabetics' heightened susceptibility to periodontal tissue destruction.

CLINICAL SIGNIFICANCE

By understanding the pathogenetic mechanisms behind periodontal diseases, dentists are better equipped to make decisions about using new diagnostic or therapeutic modalities in patient care.

The pathogenesis of periodontal diseases. *J Periodontol* 70:457–470, 1999

Reprints available from Science and Education Dept, American Academy of Periodontology, Suite 800, 737 N Michigan Ave, Chicago, IL 60611-2690; fax: 312–573-3230; e-mail: adriana@perio.org

Oral Medicine: How Oral Bacteria May Affect the Lungs

Introduction

At least six studies have suggested that poor oral health is related to respiratory infection. The possible associations between oral bacteria and respiratory infections are reviewed, along with the mechanisms that may explain these links.

RESPIRATORY DISEASES

Community-acquired pneumonia is typically caused by bacteria that reside in the mouth and throat. Hospital-acquired pneumonia causes significant morbidity and mortality. The causes of exacerbations of chronic obstructive pulmonary disease (COPD) and emphysema are not fully known, but bacterial infection is believed to play a role.

ORAL BACTERIA

Dental plaque may serve as a reservoir for oral pathogens that cause pulmonary infections. As oral bacteria are released from the plaque, they enter saliva and can be aspirated into the lungs. Lung-fluid cultures have yielded a variety of oral anaerobes and facultative organisms, many of which are associated with periodontitis. Among patients in intensive care units and residents of nursing homes, plaque has been found to harbor respiratory pathogens.

Hospitalized patients and other ill individuals often are not able to perform oral hygiene procedures, resulting in more dental plaque. This increase in plaque may promote interactions between plaque bacteria and respiratory pathogens, allowing plaque to serve as a reservoir for respiratory pathogens that are shed in saliva. Aspiration of this saliva may result in respiratory infections.

MECHANISMS

There are several possible mechanisms by which oral microbes can foster respiratory infection. As mentioned above, oral pathogens may be aspirated into the lung. Salivary enzymes associated with periodontal disease may modify the surface of the oral mucosa to promote adhesion and colonization by lung pathogens. These enzymes may also destroy the salivary pellicles on pathogenic bacteria. Last, cytokines from the periodontal tissues may alter the epithelial tissues in the respiratory tract, promoting infection.

Clinical Significance

Oral bacteria can cause lung infections, and dental plaque may harbour respiratory pathogens.

Scannapieco FA: Role of oral bacteria in respiratory infection. *J Periodontal* 70: 793–802, 1999

Reprints available from FA Scannapieco, Dept of Oral Biology, Univ at Buffalo, State Univ of New York, 318 Foster Hall, Buffalo, NY 14214; e-mail: fas1@acsu.buffalo.edu

Periodontics: Controlled-Release, Local-Delivery Drugs for Periodontitis

Introduction

Several locally applied antimicrobial agents have been introduced to periodontal therapy. The most successful drugs offer sustained release of the active agent and are effective adjuncts to scaling and root planing. The currently available treatment systems are described, along with their advantages and disadvantages. All of the drugs reviewed here are effective against periodontal pathogens, release effective drug concentrations, have demonstrated clinical efficacy, and required professional application.

ACTISITE

Actisite (Alza Corp./Procter & Gamble) is the trade name of tetracycline-containing fibers that are inserted into the periodontal pocket. A key advantage of Actisite is that only a single application is required, and effective tetracycline concentrations are maintained. However, insertion does take about 10 minutes, an adhesive is needed to retain the fibers, and the fibers must be removed later. Actisite has been approved by the U.S. Food and Drug Administration (FDA) for adjunctive periodontal treatment. As with all antibiotics, there is a risk that antibiotic resistance will develop.

ATRIDOX

Atridox (Atrix Laboratories/Block Drug) is a gel system that delivers doxycycline to the periodontal pocket and maintains effective drug concentrations. In clinical trials, a periodontal dressing was used for retention and a second patient visit

was required to remove it; also, two applications were used in the trials. Atridox gel is biodegradable. However, the risk of antibiotic resistance exists.

ELYZOL

Elyzol (Dumex) is a gel that delivers metronidazole to the pocket. Unlike the other subgingival antibiotic systems, Elyzol is active against anaerobes only, and not the aerobic bacteria associated with periodontal health. Research has demonstrated that results from Elyzol treatment are equivalent to those from scaling and root planing, but adjunctive benefits when used in conjunction with mechanical therapy have not been shown. An advantage is that Elyzol is biodegradable, but two applications are needed at least 1 week apart, and it offers sustained release for only 24 to 36 hours.

PERIOCHIP

Because the FDA-approved PerioChip (Perio Products Ltd./ Astra USA) contains the antiseptic chlorhexidine rather than an antibiotic, there is no risk of antibiotic resistance with its use. It has been shown to reduce probing depths as effectively as subgingivally delivered antibiotics. Another benefit is that it takes most clinicians less than 1 minute to insert the PerioChip. This delivery system releases effective drug concentrations and sustains them. PerioChip may be a useful adjunct to mechanical therapy.

Clinical Significance

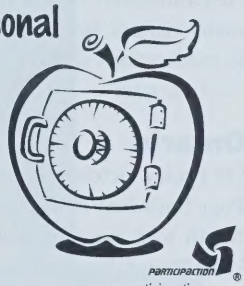
A variety of antimicrobial agents are available for site-specific treatment of periodontal disease. Clinicians should be familiar with the advantages and disadvantages of each system.

Ciancio SG: **Site specific delivery of antimicrobial agents for periodontal disease**. *Gen Dent* 47:172–181, 1999

Reprints available from Academy of General Dentistry, 211 E Chicago Ave, Chicago, IL 60611; e-mail: agdjournal@agd.org

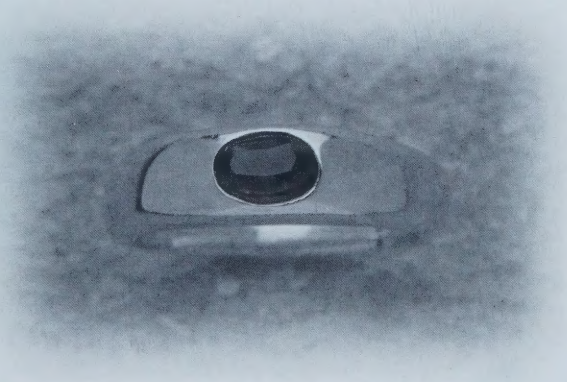
Q: Do you have a personal investment plan?

A: For a balanced portfolio, include:
1. Physical activity
2. Healthy eating
3. Your doctor's advice



PARTICIPACTION®
www.participaction.com

a CIRCLE of Dental Hygiene



CDHA ACHD
THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

Please print clearly Date _____

Customer Name _____
Customer Address _____
City _____ Province _____
Postal Code _____ Phone ( ) _____
10K Yellow Gold ☐ 10K White Gold ☐ Finger Size _____

Two payment options: You can pay in full for ring when ordering, or send a $50.00 deposit and we will ship your ring C.O.D. for balance owing.

Hygienists ring with genuine amethyst stone 165.00
Shipping costs 10.00
Sub Total 175.00
G.S.T. 12.25
Ontario Provincial Tax
(if you are an Ontario resident) ..... *(8%)* _____
Total ..... _____
Less Deposit ..... _____
C.O.D. Balance Due ..... ☐

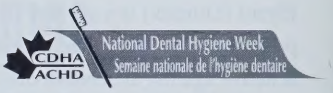
Visa and Mastercard accepted. Please insert card number with expiry date and sign. We will ship Priority Post.
Mastercard # _____
Visa # _____
Expiration Date _____
Signature _____

Please allow five to six weeks for delivery. Please mail order to:

ArtCraft CDHA Dental Hygiene Ring
P.O. Box 238, Carleton Place
Ontario, Canada K7C 3P4

Tel: (613) 253-0412 Fax: (613) 253-0407

National Dental Hygiene Week™



Newfoundland

The Victoria Order of Nurses (VON), St. John's Branch, sponsored a health fair for the older person. The fair was held in October and therefore fit nicely with National Dental Hygiene Week™. The fair was well attended and the Newfoundland Dental Hygienists Association booth had many visitors. Information given most often was related to medications which can cause zerostomia.
— *Anne Clift*

Ontario

On Friday October 22nd, 1999, Penny Spacie RDH and I, Pope Sotirakos-Athanasakos RDH, went to extendicare North York Nursing Home for National Dental Hygiene Week™ and presented a table clinic to promote and increase awareness of dental hygienists across Canada. The issues most Nurses and Nursing Aids identified as important and relevant to the care they provided were dry mouth, mouth sores, and bad breath. *John O. Butler, Biotene, Oral-B, Smithkline Beecham, Sulcabrush Inc., W. L. Gore Associates, Colgate-Palmolive* and *Warner Lambert* were generous in supplying donations, samples and pamphlets to hand out to patients and staff upon request, along with "**DID YOU KNOW?**" from the Canadian Dental Hygienists Association.

"During National Dental Hygiene Week™, I have attended a Nursing Home, a High School, a Pre-School and a Junior and Senior Kindergarten class. National Dental Hygiene Week™ has been very successful and rewarding and I will continue to contribute and volunteer! A special thank you to all involved for making this day a success."
— *Pope Sotirakos-Athanasakos*

Saskatchewan

On Saturday, October 16th, twenty-five students and faculty members from both the dental assistant and dental hygiene programs and the Saskatchewan Institute of Arts, Science and Technology (SIAST) fabricated 40 mouth protectors for the Regina Pat Canadians hockey team. Paul Li contributed his expertise and brought his own equipment to the endeavour. This was how our National Dental Hygiene Week™ began.

Other dental hygienists donated their time to educating grade school students on the profession of dental hygiene.

In addition even more dental hygienists from throughout the province distributed the National Awareness Campaign posters. These posters were displayed in facilities such as: libraries, nursing homes and community centres.

There were community announcements sent to various radio and television stations. The CDHA News Release and Feature Story were sent to newspapers around the province.

Manitoba

University of Manitoba Students SHINE at 1999 National Dental Hygiene Campaign. Great minds have often pondered... *Can chewing gum really help fight cavities?... Which type of toothbrush does the best job?... Is bleaching harmful to your teeth?* These are just a few of the many questions which were answered by dental hygiene students at the 1999 National Dental Hygiene Campaign (NDHC).

The students of the University of Manitoba School of Dental Hygiene Class of 2000 were out in full force for the 1999 NDHC. The theme **SHINE YOUR SMILE: WE'LL SHOW YOU HOW!** focused on the latest over-the-counter products available to keep our smiles bright and healthy. Twenty-six students researched a myriad of current oral health products and presented their findings in colorful, eye-catching displays to hundreds of students at both the University of Winnipeg and University of Manitoba campuses.

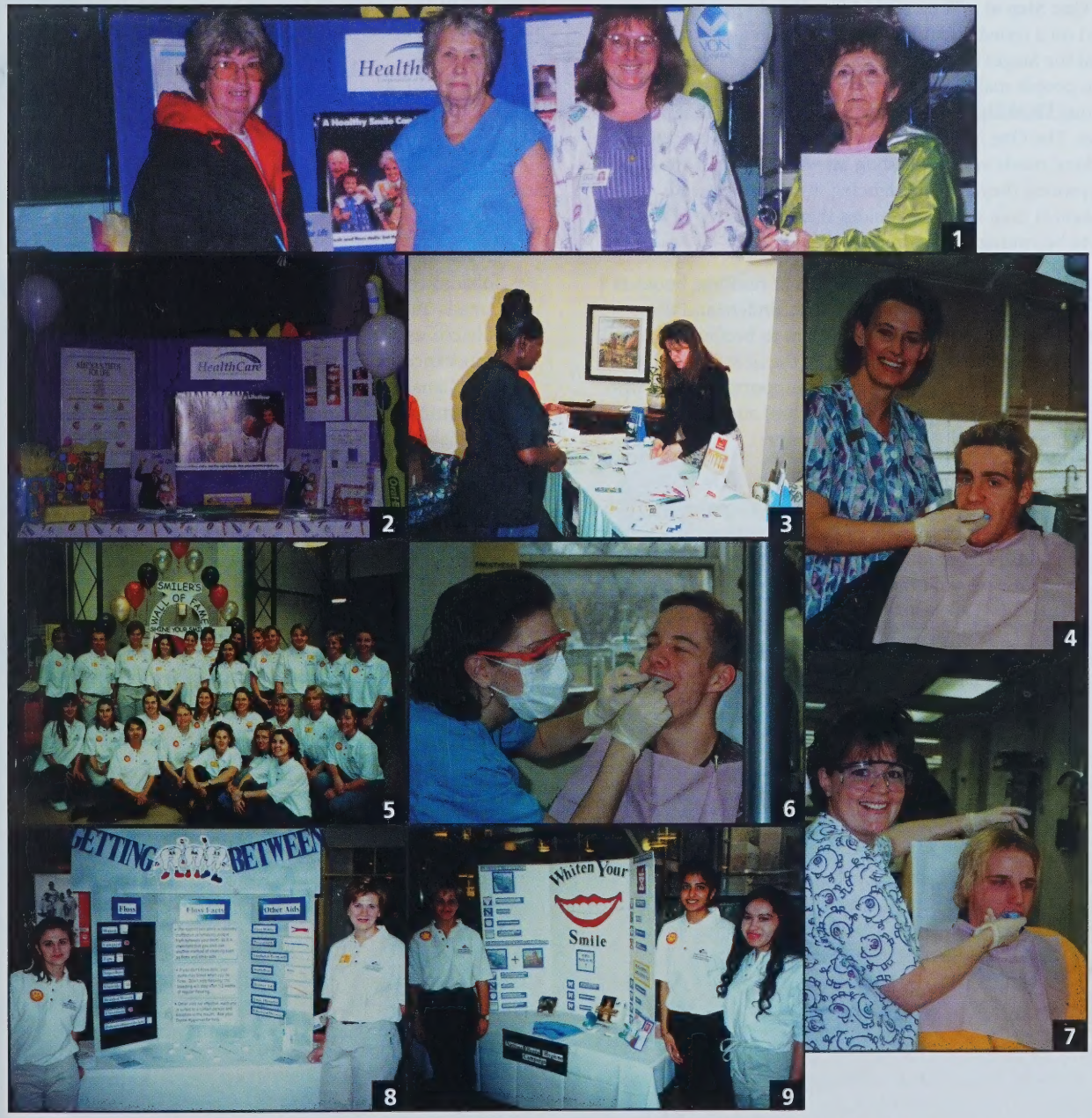
People that visited the "**What Should you Chew-z?**" display were surprised to discover that chewing sugarless gum can in fact help reduce caries. Free samples of Trident were also a great drawing care here. While "**Browsing for Brushes**", people found the most important factor was how they brushed rather than which toothbrush they choose. Gerry Hagglund of *Sinclair Dental* graciously donated his time and the use of a state-of-the-art digital camera and computer simulated whitening program to demonstrate to passerby how tooth whitening can change their smiles. This was a great attraction for many people who continue to have reservations about tooth whitening. While gleaning many interesting facts at "**Save Your Smile**" regarding which mouthguards offer the best protection against sport injuries, sports fans had the opportunity to win free tickets to the upcoming Manitoba Moose hockey game and a dazzling jersey. "**Swish & Spit**", the pink and blue mouthwash mascots were an attractive addition to this display which exposed the shortcomings of many popular over-the-counter mouthwashes. A common question for students of "**Just Squeeze It!**" who presented their information on toothpaste was "*does whitening toothpaste really work?*" Thanks to their thorough research of the topic, they were able to inform the public that whitening toothpaste has been shown to have little effect. Garlic lovers were reassured by the students at the "**U Take My Breath Away!**" display that nearly 80% of halitosis originates in your mouth and that one of the most effective bad breath preventive strategies is tongue cleaning. Is flossing the best way to clean the interproximal spaces between you teeth? The "**Getting Between**" display offered many useful alternatives, including a wide variety of dental floss. The latest in electric toothbrushes was displayed at "**Turn on... To a Power Smile**" where some of the best attributes of power toothbrushes were supported.

A highlight of the event was the life-sized "box of floss" mascot which was manned by three enthusiastic and courageous students. A big thank you goes out to *Christine Sanders, Jason Skazyk and Terry Tomberli*!

Judging by the responses of many students and professionals who visited the displays, the **SHINE YOUR SMILE** event was a great success! Every display offered free samples of its products to anyone who posed a question to the students. Draw prizes provided an incentive for people to visit all the displays in order to become eligible for them. Prizes included electric toothbrushes, an oral irrigator, a custom mouthguard, a bleaching appointment, a dental hygiene appointment, gift baskets, and more.

Through much hard work, time and dedication, the efforts of many students paid off. As a whole, the 1999 **SHINE YOUR SMILE** campaign offered a positive and enriching experience for both dental hygiene students and all who attended. *THANK YOU* to all our generous supporters and a special thank you to our partners: the *Manitoba Dental Hygienists Association* for providing financial support for each display, to Gerry Hagglund of *Sinclair Dental* for his direct involvement, and to *Dentsply* for its generous financial support.

— *Sheena Iverson and Heather Pernise,*
NDHC Student Event Coordinators



1. Participants at NDHW Healthfair for Older Persons
2. Healthcare booth at Healthfair for Older Persons — October 1999
3. Pope Sotirakos-Athanasakos (RDH) hands out pamphlets and samples to Nursing staff at North York Extendicare
4. SIAST Dental Hygiene student Joelle Burlock
5. Class of 2000 at University of Manitoba
6. SIAST Dental Hygiene student Teri Ostlund
7. SIAST Dental Hygiene student Wendy Skotheim
8. Getting Between : Sandra Navarro & Heidi Smith, U of M
9. Whiten Your Smile : Roxanne Hislop, Amandeep Rai, Emma Martinez, U of M

Breakthrough Quit-Smoking Program Launched by the Canadian Cancer Society

January 2000 will see record number of smokers trying to quit.

One Step at a Time — a Breakthrough quit-smoking program — was launched in December 1999 by the Canadian Cancer Society (CCS).
The **One Step at a Time** (OSAAT) self-help program is based on a tested scientific theory of behaviour change called the Stages of Change model. This theory shows that when people make major behaviour changes — such as quitting smoking — they usually go through a series of stages. The One Step at a Time program recognizes that smokers' needs vary depending on which stage of the quitting process they are experiencing. It meets the needs of smokers at each stage and guides them every step of the way to becoming smoke-free.

At the heart of the program is a series of resource booklets that help smokers and their loved ones understand these stages and learn how to deal with them to become — and stay — smoke-free. A novel aspect of the new CCS program — a first in Canada — is that it also supports smokers who are not ready to quit (pre-contemplators) and people who want to help a loved-one quit (influencers).

The booklet for influencers called *If You Want to Help a Smoker Quit* offers advice on how to help a smoker through each stage of quitting, how to deal with their own stumbling blocks, and lists common mistakes that most influencers make and how to avoid them.

The CCS's new **One Step at a Time** self-help booklets are available to the public free of charge by calling the Canadian Cancer Society's national toll-free Cancer Information Service at **1-888-939-3333**. They are also available on the CCS's website at **www.cancer.ca/tobacco**

Strategic leadership to significantly reduce the prevalence and consumption of tobacco in Canada is an important joint goal of the Canadian Cancer Society and its research partner, the National Cancer Institute of Canada.

Novartis Consumer Health Canada, the makers of the Habitrol(r) Stop Smoking System, is proud to have assisted the CCS in the initial development of the **One Step at a Time** program.

As we embark on the 21st century....

- Tobacco use remains the single most important preventable cause of death in the world.
- Tobacco causes about 30 per cent of all cancers in Canada and about 85 percent of lung cancer cases.
- Tobacco use causes 45,000 deaths per year in Canada.
- Lung cancer is the leading cause of cancer death for both Canadian women and men.
- It is estimated that one out of every two smokers will die a smoke-related death.
- Environmental tobacco smoke is the number one risk factor for lung cancer among non-smokers.
- It is estimated that smoking prematurely kills three times more Canadians than car accidents, suicides, drug abuse, murder and AIDS combined.

Help us make these numbers a thing of the past.

Spread the word about the Canadian Cancer Society's new **One Step at a Time** self-help quit-smoking program.

A Healthy Diet for People with Diabetes

New guidelines for the nutritional management of diabetes have been launched by the Canadian Diabetes Association. Nutritional Management of Diabetes Mellitus in the New Millennium, provides dietitians, physicians and other health-care professionals with the information they need to support the nutrition needs of the person with, and at risk of, diabetes.

The key for people with diabetes is for them to consult a registered dietitian and their diabetes healthcare team to determine the best management plan for their circumstances.

"One of the great misconceptions about people with diabetes is that they can't eat or drink anything that contains sugar," said Carol Seto, National Director, Canadian Diabetes Association. "Healthy eating means that all foods can fit into a proper balanced diet. As part of a healthy eating plan, up to 10 per cent of daily energy intake may include sweets or sugar that has been added to food."

More than 2 million Canadians are affected by diabetes. These numbers are expected to increase dramatically as the population ages. Risk factors include being over the age of 45, obesity and being related to a person with diabetes.

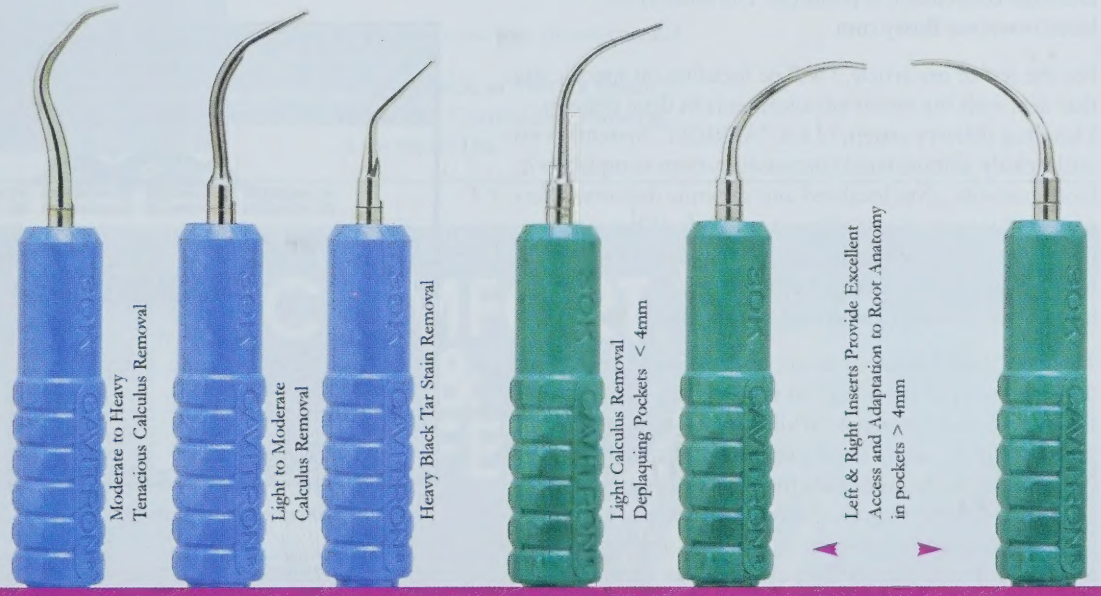
For more information, please contact:

The Canadian Diabetes Association Resources Centre
re: Nutritional Guidelines
15 Toronto Street, Suite 800
Toronto ON M5C 2E3
or call 1-800-226-8464
or visit www.diabetes.ca

Stay Focused

Cavitron® FSI®

Use The Complete Line of Cavitron Focused Spray™ Inserts.



When you're building a house you need the proper tools. When you're scaling, you need the most appropriate insert. Things work best when you use what's most appropriate for the job. That's why clinicians focused on successful scaling rely on Cavitron Focused Spray Inserts. From gross deposit removal, to fine definitive debridement, there's a specific Cavitron Insert to help you focus on the job at hand.

The enhanced water management of all Cavitron Focused Spray Inserts increases clinical visibility and enhances patient comfort. Their unique patented design with no external water tube is without equal. For the FSI family or any of our other #1 selling Cavitron Brand of ultrasonic inserts, contact your local DENTSPLY Preventive Care distributor or call 1-800-263-1437. There's no better way to stay focused on success.

www.dentsply.ca

Cavitron

DENTSPLY CANADA

PROBING THE NET

By Karen Wolf, Dip.D.H.

"I know a bank where the wild thyme blows,
Where oxlips and the nodding violet grows;
Quiet over-canopied with luscious woodbine,
With sweet musk-roses, and with eglantine:"

from A Midsummer Night's Dream

Spring is here once again offering a time of renewal for both nature and mankind. I must admit I am happy to see its return.

Just the other day, while doing research, I stumbled on this personal website put out by an American colleague. At this site, you will find a large selection including; news groups, RDH schools, a chat room, a message board and a well-organized, easy-to-use "smiley's place" for parents and children. I did notice that for the dental information news, it takes you out to *Yahoo* for a random search, which, although convenient, is pointless. The address is: **http://www.ms-flossy.com**

For the rest of my article, I will be focusing on specific sites that deal with the recent advancements in drug delivery. This drug delivery system (a.k.a. "ATRIGEL" System) is versatile; easily administered (increased patient compliance); biodegradable; gives localized and systemic delivery; offers sustained release; is cost efficient, and safe. What is the down side? There are no long-term studies as of yet. For a more comprehensive read, check out: **http://www.atrixlabs.com/coinfo/prod_atrigel.htm**

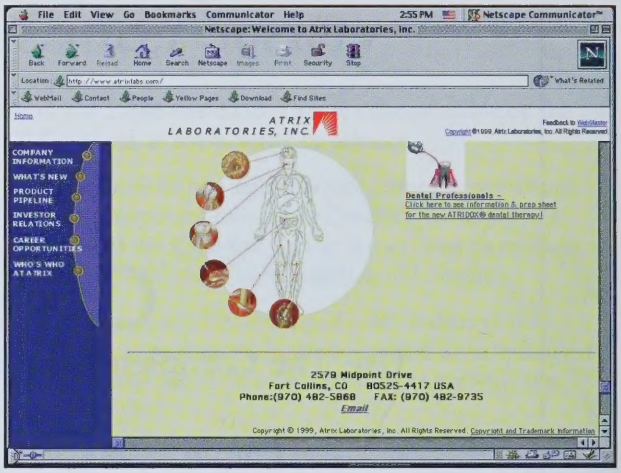
There are three brands of drugs available for the periodontally involved patient using this type of delivery: Atridox, Perio Chip, and Perio Stat "While no long-term studies are yet available for any of these products, statistically, they offer dentists and dental hygienists the ability to augment traditional periodontal therapies to enhance and promote healing." So far, Atridox is the one that is FDA approved, but you will learn more about all three at the Rocky View Dental Care "Behind the Scenes" bulletin: **http://www.28smile.com/bulletin.html**

And more again at the press release put out by Atrixlabs: **http://www.atrixlabs.com/pressrels/press90898.htm**

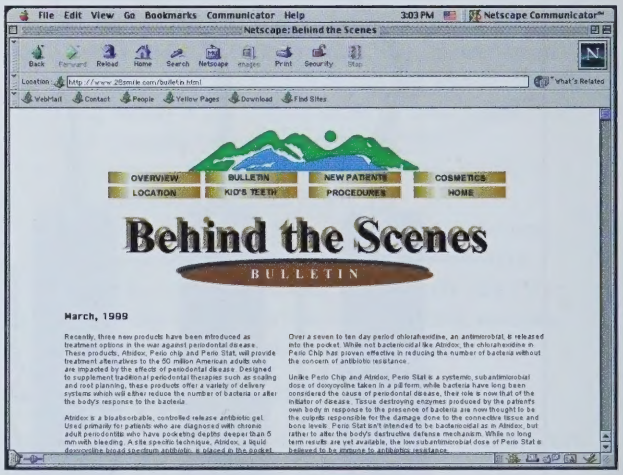
Ms. Flossy herself has an article at: **http://www.ms-flossy.com/atridox.html**

I couldn't find a specific site for Perio Stat but I was able to turn up some information on Perio Chip at: **http://www.ppl.co.il/pt1.html**

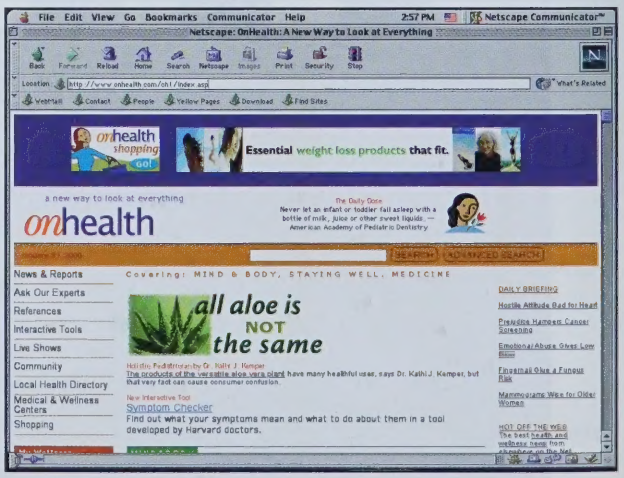
Finally, check out the onHealth website and be sure to bookmark it for future reference. At this site, I particularly like their drug database. After connecting with their homepage at: **http://www.onhealth.com/** I typed in "drug database" in the search box and then clicked on the first result titled the same. The database is alphabetized for easy access. Be sure to look up "doxycycline" which is the antimicrobial used in Atridox and Perio Stat.



http://www.atrixlabs.com

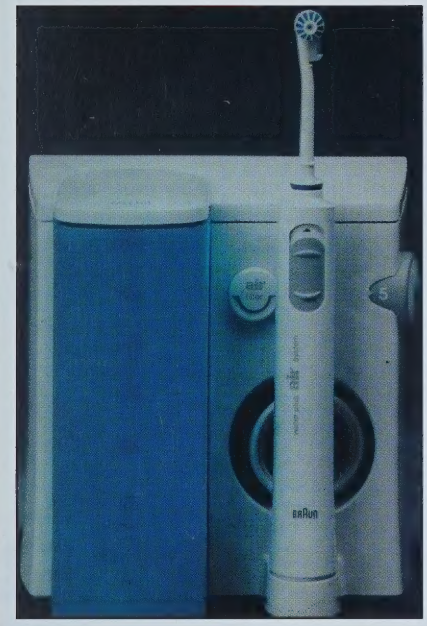


http://www.28smile.com/bulletin.html



http://www.onhealth.com

Braun Oral-B Double Plaque Fighting Capability



A new breakthrough technology by Braun Oral-B helps fight gum disease with the use of a unique water-jet that mixes water and air to attack plaque below the gumline and reduce the bleeding and bacteria associated with gingivitis.

The Braun Oral-B OxyJet™ works to prevent gum disease with its micro-bubble technology. It features a miniature turbine in the nozzle that creates a spiraling stream of air-enriched water for general cleaning and protection. It can also create a straight, mono-stream of water and air for site-specific cleaning. This oral irrigator is ideal for cleaning bridges, implants and fixed orthodontic appliances.

The OxyJet technology is available in two different appliances — as a stand-alone appliance or within the Braun Oral-B OxyJet™ 3D Center.

The OxyJet 3D Center may sound like a mouthful, but it's actually a unique compact oral center that combines two of Braun's oral care innovations in one simple package — the OxyJet and the 3D Plaque Remover.

For further information, please contact:

Vanessa Bacic or Patrick Erlich
Harbinger Communications Inc.
(416) 960–5100

Introducing Nitri-Care®, the 100% nitrile glove from Best. It's designed to keep your hands drier and cooler, with less hand fatigue. On one hand, Nitri-Care® provides better dexterity and greater control. On the other hand, it's three times more puncture resistant than latex or vinyl. It's even chemical resistant. Now that's a glove fortified with confidence. For a free sample, call Alice, at 1 800-565-BEST or fax (819)-849-6120

Best®
Best Glove Manufacturing Limited

Gstaad-Saanenland, Beautiful Switzerland

Located in one of the most beautiful and scenic places, close to the french speaking part of Switzerland.

Full-time dental hygienist required replacing Canadian dental hygienist returning home.

New and modern general dental office with two young dentists and a young team.

Postgraduate education in periodontology, USA.

General dentistry with pediatric dentistry, orthodontics, fixed & removable prosthetics, periodontology & implantology and geriatric dentistry.

Please call of fax/e-mail resume to:

Dr. Ch. B. Tritten
Gstaadstrasse
CH-3792 Saanen
Phone: +41 33 748 73 73 Fax: +41 33 748 73 70
e-mail: ctritten@swissonline.ch

Penticton, BC

We require a Dental Hygienist for a 6-month maternity leave beginning May 1st, 2000. 4 days per week with possibility of continuing 2 days per week after leave. Great bonus system in place.

Please call or reply ASAP for this wonderful opportunity.

Dr. Ian R. Dickinson
602 Main St.
Penticton BC V2A 5C8
Phone: 250–493–4167 Fax: 250–493–4810

Yellowknife, NWT

Full Time Dental Hygienist is required immediately for dental clinic in Yellowknife, NWT. We are seeking a reliable, friendly, outgoing individual to work as part of a team.

Salary is based on hourly or commission.

Please mail or fax resume to the following:

Dr. H. Biati & Associates
PO Box 1178
Yellowknife, NWT X1A 2N8
Fax: 867–873-9650

Unemployed? Frustrated? Unhappy in Your Present Position?

Dental Fill-Ins can help. We provide selectively screened personnel for Vancouver Island Dentists. No fee or registration. All applications confidential. To join our elite placement force in beautiful BC, call **Maggie** at 250–753–1008 or fax resume to 1–250–753–0517.

Trail, BC

Hygienist for busy 2 dentist office in Trail, BC. Contact Nancy at 250–368–5066 or fax resume to 250–368–8166.

Creston, BC

Busy dental office requires second hygienist. Great lifestyle and recreational opportunities. Reply with resume to: PO Box 1029, Creston, BC V0B 1G0

Switzerland

The "Dental Connection" is seeking ambitious and adventurous dental hygienists for a 1–2 year work term in beautiful Switzerland. Excellent salary, many holidays, and living accommodations arranged. Please send your resume to:

Dental Connection
83 Abbott Avenue, Toronto, Ontario M6P 1H5

Phone 416–828–5024
email: dental-connection@sympatico.ca

Attention: Andrea

Terrace, BC

Are you the person we are looking for: highly motivated, warm, caring individual, positive team player, and loves having fun in the outdoors. Competitive wages and benefits based on qualifications and experience. Dental Hygienist position available immediately. Apply to:

Attention: Jessica
200-4619 Park Avenue
Terrace, BC V8G 1V5

Phone: 250–635–7611 Fax: 250–635–7630

Queen Charlotte Island, BC

Join our fun family practice in the Queen Charlotte Island, BC. Enjoy great outdoor recreation and the warmth of our close community. Equipment includes cavitron, statim, panorex, overhead TV with intraoral camera & Casey patient education. Join our staff that's more like family. Come and make a difference. Call **Leslie** collect @ 250–559–8384.

Classified Ad Rates

Fifty (50) words or less, $25.00 (plus 7% GST).
Additional words: $0.50 per word (plus 7% GST).

Closing date for the receipt of copy is approximately one month prior to publication date:

DEADLINE	ISSUE	CIRCULATION DATE
December 10	January/February	January 15
February 10	March/April	March 15
April 10	May/June	May 15
June 10	July/August	July 15
August 10	September/October	September 15
October 10	November/December	November 15

Advertisers' Index

BEST GLOVE 77
BUTLER ..... IFC
COLGATE 44
DENTSPLY 75
D-SHARP 67
HU FRIEDY ..... OBC
ORAL-B ..... TOC
PERIO REPORTS 57
SULCABRUSH ..... IBC
TELEDYNE WATERPIK 48

Sulcabrush® travel

NEW!

Get a handle on healthy Gums!™

Recommended for patients who have difficulty flossing!

Introductory special *

.75 ¢ each

(144 - Bulk)

*Offer expires May 31, 2000

The ***Sulcabrush®*** *travel* brush - it's a new stick inspired by both the ***Sulcabrush®*** and the ancient chew stick (mswaki).

The ***Sulcabrush®*** *travel* has the same bristle tip as the original ***Sulcabrush®***, without the angles. It's flatter, more compact and half the size, so it fits easily in a purse, briefcase, daytimer or pocket.

Most importantly, it effectively removes plaque between the teeth and stimulates the gums.

Wooden chewsticks have a rich history of usage throughout the Middle-East and Asia, where they are used with and without toothpaste.

The ***Sulcabrush®*** *travel* brush can be personalized.

To place your order, please call ***1 800 387 8777***

Special offer – Order form

Photocopy this page, cut here – place this order form in envelope and mail to the address below.
(Offer expires May 31, 2000)

Special **.75¢** each (144 - Bulk) **$108.00** + S&H + Txs.

Please PRINT clearly.

DDS Name

RDH Name (Contact)

Office Address (For Billing)

City

Province

Postal Code

Tel:

Fax:

VISA MasterCard Card No.

Exp. Date

Name on Card

Signature

1 800 387 8777

16 Brisbane Road, Downsview
Ontario, Canada M3J 2J8

TAKE CONTROL!

WITH NEW SATIN STEEL COLOURS

Satin STEEL™ COLOURS®

We've taken some of Hu-Friedy's most popular instruments and added a splash of color! But this color is much more than *fun*, it's *fun*ctional! Our **Satin Steel** instrument handles are now available with **Signature Series Grips**. Signature Grips put the **control** in your hands–control of the instrument and control in your office. The soft, silicone grip provides greater tactile sensitivity and rotational control, plus the wide range of colors gives you the option to customize set-ups by procedure, user, or any other way you choose.

To see *and* feel the difference Satin Steel Colours can make in your office, call your dealer or call us at 1-800-HU-FRIEDY.

AVAILABLE IN:

RESTORATIVE
- CARVERS
- PLUGGERS
- EXCAVATORS
- BURNISHERS

PERIODONTAL
- SCALERS
- CURETTES

DIAGNOSTIC
- EXPLORERS
- PROBES
- MIRROR HANDLE
- EXPROS

HU-FRIEDY DENTAL

PROBE

SCIENTIFIC JOURNAL

May/June 2000 vol. 34 no. 3

ANALYSIS OF THE HYDROXYAPATITE ROOT SUBSTITUTE SURFACE POST ULTRASONIC SCALING

THE PROFESSIONAL STATUS OF DENTAL HYGIENE IN CANADA PART TWO: CHALLENGES, INSIGHTS AND ADVANCEMENT

IADR ABSTRACTS FROM WASHINGTON, APRIL, 2000

DENTAL LIBRARY
UNIVERSITY OF TORONTO
124 EDWARD ST.
TORONTO M5G 1G6
ONTARIO, CANADA

CDHA ACHD

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION

L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

"You mean to tell me you're *not* using Butler PROTECT® Fluoride Foam?"

Great Taste. No Overflow Waste.

New Butler PROTECT® Fluoride Foam is kid-tested and tastes great! With 3 APF flavours (grape, strawberry and lemon-lime) for fast fluoride uptake, and a Neutral mint flavour that prevents dulling or etching of restorations. And for you, PROTECT's unique non-aerosol pump dispenses consistently and accurately without expanding. So, no overflow waste or mess. That'll put a smile on everyone's face.

1-800-265-8353 www.jbutler.com

BUTLER®
Experts in Oral Care

© 1999 John O. Butler Company C99069

EDITORIAL: DENTAL HYGIENE RESEARCH IN CANADA

BY MARILYN J. GOULDING, RDH, BSc, MOS

One of the goals of our Probe Scientific is to offer a forum for Canadian dental hygienists to publish their own research. That may be fine for educators or public health people you say, as they are the only ones able to conduct research. Not so; individual clinicians see a multitude of clients every day and each presents a separate study in dental hygiene intervention.

The original paradigm of linear research has been traced to a report by Vannevar Bush entitled, "Science-the Endless Frontier" in the post-war era of 1945. It was developed as a template for scientific policy, and was presented to President Truman in July of that same year. For fifty years this model, one in which basic laboratory work precedes applied research which in turn leads to technological development, was the standard. It was responsible for ranking American research and development as world leader and other developed nations followed course, Canada included.

In 1997, Petroksi ('Development and Research', *American Scientist*:: 85: 210-213, 1997) argued that the reverse was true, that development was responsible for raising new research questions. He states, "Development and research must begin with a clear articulation of the developmental problem and justify any research in terms of it." He clearly identifies a "return to support for science and technology led by social and national need."

This thought had been raised earlier in our Canadian literature ('Surgery of the Future', *Can Med Assoc J*: 93: 408-410, 1965) when Walter Zingg wrote ". . . clinical investigation usually begins with a clinical observation, perhaps an unexplained clinical finding . . . . Investigations on patients . . . are necessarily restricted, and frequently the problem needs to be studied" (back in the laboratory following clinical identification).

This more evolutionary model of research is essential to the clinicians of the world as potential initiators of research; the difference lies only in the formulation of the problem. In the former linear model the basic research leads to the both the development of technology and its clinical application. Whereas, in the newer context, technical development and clinical application serve to raise innovative questions to take into the basic research arena of the laboratory. Where one may be considered 'curiosity- or hypothesis-driven' research the latter is more accurately 'design-directed' or 'goal-oriented' research.

Who has not experienced, at the end of a busy day, an oft-used technique or device begging the question "What if . . .?" in the clinician's mind? What if this device was longer, rounder, curved, straight, etc.? What if this irrigant was stickier, more flowable, was higher in concentration, was mixed with whatever?" The clinician experiences technology and methodology in action and works with it time and again. This sets the wheels in motion, raising new hypotheses, which in turn takes us back to the laboratory. Dr. Bush was correct in identifying science as the 'endless frontier'. I naively believed, upon entering the field of research, that I would find all the answers to the myriad of conundrums I formed as a clinician. What I found at the end of each study was a plethora of new and unanswered questions!

One of the dilemmas faced daily by agencies such as the Food and Drug Administration in the United States and the Health Protections Branch in Canada, is making sure that just the right amount of basic research is done prior to the introduction of any new diagnostic or therapeutic into clinical practice. It is likely you remember the breast implant fiasco which raised such a public outcry demanding responsible and adequate basic

DENTAL HYGIENE RESEARCH IN CANADA...continued on page 86

Kids are patients too!

How To Encourage Your "Patients" To Brush Longer

Colgate Introduces

New!

Musical Cap Barney™

How it works

- When opened, the musical cap plays a popular Barney™ song for 70 seconds†

Product Benefits

- Motivates kids to brush longer and more often for healthier teeth and gums.
- Encourages children to develop an oral care routine.
- A helpful tool for parents!

Musical Cap Barney™

"Helps Make Brushing Fun!"

Another innovation brought to you by

Colgate

DEVELOPED IN Colgate CANADA

The 70 seconds of music play time encourages kids to brush for a full 60 seconds, and the extra 10 seconds allows for the time it takes the child to apply the toothpaste to the brush.

† 2000 Lyons Partnership, L.P. All rights reserved. The Barney name and character, and the overlapping dino spot and Barney and Star logo are trademarks of Lyons Partnership, L.P. Barney, and the Barney and Star logo are Reg. U.S. Pat. & Tm. Off

*TM Reg'd. Colgate-Palmolive Canada Inc.

MANAGER, COMMUNICATIONS SERVICES:
Angela J. Whelan, B.A.

EXECUTIVE DIRECTOR:
Carol Matheson Worobey, Dip.D.H.

SCIENTIFIC EDITOR:
Marilyn Goulding, RDH, B.Sc., MOS

ADVISORY GROUP:
Joanne Clovis, Dip.D.H., B.E.D., M.Sc.
Bonnie J. Craig, Dip.D.H., M.Ed., RDH
Bob Dunford, B.Sc., M.Sc.
Patricia Johnson, Dip.D.H., B.Sc.(DH), M.Sc., Ph.D.
Professor J.F.L. Pimlott, Dip.D.H., B.Sc.D., M.Sc.
Salme E. Lavigne, RDH, B.A., M.S.

EDITORIAL BOARD LIAISON:
Laura MacDonald, Dip.D.H., B.Sc.D., M.Ed.

EDITORIAL ADVISOR:
Kristina Edwards, M.A.

DESIGN: Catherine Pirie, B.I.D.

Published six times a year: Jan./Feb., Mar./Apr., May/June (Scientific Issue), July/Aug., Sept./Oct., Nov./Dec. (Scientific Issue), by
The Canadian Dental Hygienists Association,
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Tel (613) 224-5515

Canada Post Publications Mail Registration No. 09877

CANADIAN POSTMASTER:
Notice of change of address and undeliverables should be sent to:
Canadian Dental Hygienists Association
96 Centrepointe Drive,
Nepean, ON K2G 6B1

Subscriptions $75.00 (GST Included) in Canada, $125.00 Cdn for US and $130.00 Cdn elsewhere. Fifty cents per issue is allocated from membership fees for journal production. All statements are those of the authors and do not necessarily represent the CDHA, its Board, or its staff.

ADVERTISING AND SUBSCRIPTIONS:
Keith Health Care Inc.
10 Front Street South
Mississauga, ON L5H 2C4
(905) 278-6700

CDHA 2000
6176 CN ISSN 0 834-1494
GST Registration No. R106845233

CDHA CENTRAL OFFICE STAFF:

Executive Director:
Carol Matheson Worobey

Manager, Communications Services:
Angela J. Whelan

Manager, Finance and Administration:
Monique Belleau Rock

Manager, Member Services:
Sandra VanWart

Member Services Assistant:
Louise Lalonde

Administrative Executive Assistant:
Shelly Minnie

Receptionist/Information Clerk:
Françine Fortin

All CDHA members are invited to call the CDHA's Member Line toll-free, with their questions/inquiries:
1-800-267-5235, Fax (613) 224-7283
Internet: http://www.cdha.ca
E-mail: info@cdha.ca
We look forward to serving you.

The Canadian Dental Hygienists Association's Journal, *Probe*, is the official publication of the CDHA. The CDHA invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to Probe do not necessarily represent the views of the CDHA, nor can the CDHA guarantee the authenticity of the reported research. Copyright 2000. All materials subject to this copyright may be photocopied for the non-commercial purpose of scientific or educational advancement.

TABLE OF CONTENTS

EDITORIAL:
DENTAL HYGIENE RESEARCH IN CANADA 83
By Marilyn Goulding, RDH, B.Sc., MOS

ANALYSIS OF THE HYDROXYAPATITE ROOT SUBSTITUTE SURFACE POST ULTRASONIC SCALING 87
By Marilyn Goulding, RDH, B.Sc., MOS

THE PROFESSIONAL STATUS OF DENTAL HYGIENE IN CANADA PART TWO: CHALLENGES, INSIGHTS AND ADVANCEMENT 99
By Joanne Clovis, Dip.D.H., B.Ed., M.Sc.

IADR ABSTRACTS FROM WASHINGTON, APRIL/2000 105

COVER: The cover includes images from Corel Photo Studio and www.comstock.com.

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

ADVERTISERS' INDEX

BUTLER ..... IFC
COLGATE 84
HU FRIEDY ..... OBC
KNOLL PHARMA 116-117
M. FERGUSON INC. 118
ORAL B 113
PERIO REPORTS 118
SOLAR BRUSH ..... IBC
CDHIP 114

(continued from page 83)

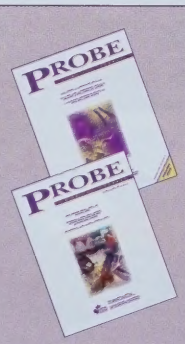
research prior to the release of a new device. We, as a society, must now live with the reality of those physically handicapped individuals born after mothers used the new drug thalidomide, to reduce their morning sickness. Conversely, if we wait until all the basic science is done, no device will ever be introduced into the clinical setting. What is the perfect formula for research and development?

The reality is likely that we must randomly grope forward in a 'bump and find' mode. We have as proof, the now defunct Artificial Heart Program funded by the National Heart, Lung and Blood Institute. Their aim was to develop a totally implantable heart, with affiliated research projects directed at polymer membrane development, biological surfaces, blood material interface events, and implantable batteries, just to name a few. No successful artificial heart resulted from these efforts but many of the research projects supported by the program added value to the pool of basic knowledge and spurred further development in this and other fields. A more current example is the incredible explosion of discovery stemming from the Human Genome Project (*Probe Scientific*, inaugural edition, 1999).

The task of scientists involved in goal-oriented research will be to convince the scientific community which adheres to the old, and less adaptable linear model, that the same scientific standards of quality are maintained. This is essential and not impossible.

Goal-directed research is also exciting as it opens the doors for our dental hygiene clinicians to become involved in, and even direct, 'real research'. This is important because our status as self-regulated professionals depends on the fact that we are able to 'create and add to our own body of knowledge'. Our clinicians however, are unsure of where to begin. You may read this editorial and say, 'Yes! I have seen the potential answer to some of our clinical problems as I am working each day!' But how do you go about designing and conducting a 'study' on the dilemma and any potential answer you hypothesize? Perhaps we need to foster research design workshops for our members, mentoring them in ways to approach their questions in a valid manner, one which will be suited to publication at study's end.

In my interactions with various hygiene groups in Canada many individuals have evidenced curiosity regarding how I became involved in research. These same hygienists have fine minds and querying personalities well suited to scientific investigation. Unfortunately, in Canada, we have few opportunities for dental hygiene in positions at research centers *per se*. The most common situations are studies designed by educators, performed in conjunction with their teaching duties in university settings. It is time we assisted our clinicians in this endeavor by teaching the basics of research at the entry-to-practice level. This at least, would give graduating clinicians the power to read, absorb and discern the current literature. From there we need to explore the possibilities of ongoing education and mentorship. How much support should we expect from our association? How much from our regulating bodies? How will this process begin and who will lead it? In the CDHA executive's growing roster of assignments, the volunteers are compelled to address the pressing issues of policy, administration and national standardization. Will there come a time when we can tackle our 'wish list' items? Does research mentoring reside even there? And if so, how far down the list does it fall? Is it rational to consider perhaps a field research group? *(an affiliated group of offices calibrated to carry out a defined applied research protocol and pool the results)* It would take funding and designated personnel with an eventual national plan; not impossible. This publication is our forum; what do YOU think . . . . comments anyone?



FOR AUTHORS' INSTRUCTIONS, PLEASE REFER TO THE MAY/JUNE 1999 ISSUE OF PROBE, OR CONTACT THE CDHA OFFICE.

The Canadian Dental Hygienists Association
96 Centrepointe Drive
Nepean, ON K2G 6B1

Tel (613) 224-5515
Fax (613) 224-7283
Toll free 1-800-267-5235 *(CDHA members only)*
info@cdha.ca

CDHA ACHD
THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

ANALYSIS OF THE HYDROXYAPATITE ROOT SUBSTITUTE SURFACE POST ULTRASONIC SCALING

BY MARILYN J. GOULDING, RDH, BSc., MOS

in conjunction with:
Niagara College of Applied Arts & Technology, Welland, Ontario, Canada
and
State University of New York at Buffalo, SUNY, Buffalo, New York, USA

This study was in part funded by: Dentsply Preventive Care

KEY WORDS: ultrasonic scaling, instrumentation, modified tips, irrigation

ABSTRACT

Ultrasonic scaling, a power-driven method of instrumentation, has traditionally been used for gross debridement where it is more efficient than hand instrumentation for supragingival calculus removal. Modified tips, slimmer and curved to conform to the root surface morphology, offer an improved design to access both more accurately and deeper than hand instrumentation in subgingival pockets. At least one newer ultrasonic model allows for simultaneous medicinal pocket irrigation and debridement (Cavitron™ MED, Dentsply, International, York, P.A.). However, concerns have arisen regarding root surface damage and metal deposition in the residual smear layer.

This study compares the root surface effects following a regimen of ultrasonic delivery (Cavitron™ MED) of chlorhexidine; CHX, (compared to passive irrigation) on cylinder-shaped hydroxyapatite pellets (CaPstrate™; HA root substitutes). brought to high surface energy, smooth, hydrophilic conditions (ultra-clean) or low surface energy, rough, hydrophobic conditions (smear-layer like), for extended instrumentation times equaling > 10 hours, yet < 13 hours, over a period of 3 years.

The pellet preparation methods removed calcium carbonate superficial layers replacing them with hydrophilic clean HA substrata surfaces exposed by Gas Plasma Treatment (GPT) or with rougher hydrophobic surface layers produced by coating with octadecylsilane (ODS). These two surface quality extremes were chosen to bracket the range of possible surface conditions that might be exposed in the oral cavity (ultra-clean hydrophilic or ultra-contaminated hydrophobic). Surface characterizations were performed by profilometric, scanning electron microscopic and energy-dispersive x-ray analytical methods, with additional subsurface analyses via electron spectroscopy. Control specimens included as-supplied HA, sterile by repetitive autoclaving.

Post-test surface studies of HA cylinders augmented by the additional method of Electron Spectroscopy for Chemical Analysis (ESCA) showed retention of CHX equivalent to 0.015%. Profilometry detected no root surface gouges while SEM photography, up to 20,000 magnification, detected no root damage. Further surface and sub-surface analyses (ESCA) showed no indication of stainless steel deposition from the extended instrumentation times. The new contoured ultrasonic tips, utilized as suggested, with the convex and lateral surfaces, appear safe (no surface alteration or stainless steel deposition) to root surface materials even over extended periods of instrumentation.

INTRODUCTION

SCALING AND ROOT PLANING HAS LIMITATIONS

The American Academy of Periodontology defines scaling as "instrumentation of the crown and root surfaces" and root planing as a "definitive treatment procedure designed to remove cementum or surface dentin that is rough, impregnated with calculus, or contaminated with toxins or microorganisms".[1] These definitions allow individual technique variations, while 'endpoint of therapy' remains largely undefined, delaying evaluation of 'success', as it rests in subjective interpretations of treatment response.

Many factors can influence scaling and root planing. The success of scaling and root planing is adversely affected by deep pockets and root morphology, especially in furcated areas which lead to less-than-ideal access to the calculus deposits and difficulty in assessing residual deposits.[2-7] Instrument design,

which limits access to tooth area, poses another problem with complete deposit removal. Many earlier instrument designs failed due to inadequate knowledge of the anatomy of the periodontium.[8] As an example, the dimensions of the working ends of the Gracey curettes cannot adequately reach buccal furcations of maxillary and mandibular first molars.[9]

Ideal instrument sharpness allows the comprehensive execution of a shearing force while dull instruments impede calculus removal and may actually burnish deposits into the outer layer of the root surface. Dulling of instruments occurs during clinical procedures with as little as fifteen working strokes altering the edge formation.[10] Repeated sterilization also causes oxidation and dulling in carbon steel.[11]

Other factors to consider in calculus removal are the instrument angle, the force applied, the root surface texture and composition and the expertise of the clinician, where deviation from accepted methods can cause damage during the course of treatment. Studies have shown attachment loss to occur following scaling and root planing, even in shallow pockets. This has been related to recordable forces directed towards adjacent soft tissues.[12-14]

ULTRASONIC DEBRIDEMENT

Ultrasonic scaling, a power-driven method of instrumentation, has traditionally been used for gross debridement where it is more efficient than hand instrumentation for supragingival calculus removal. With the use of modified tips, it is equally effective as hand instrumentation in subgingival pockets.[15,16] Certain advantages of ultrasonic debridement over hand instrumentation may make it preferable for periodontal treatment. These advantages include recently-designed, narrower tips which allow enhanced access to deeper periodontal pockets and effectiveness in a static position with energy emanating from all surfaces regardless of direction of stroke. Lack of a cutting surface negates the need for sharpening, blade adaptation or angulation, all resulting in reduced soft-tissue trauma. The water coolant also acts as a lavage which improves visibility. At least one newer ultrasonic model allows for simultaneous medicinal pocket irrigation and debridement (Cavitron™ MED, Dentsply, International, York, P.A.). Ultrasonics has been suggested to result in less time, less fatigue for both clinician and client, and increased client comfort and acceptance.[17] Ultrasonic instrumentation also removes observable stain and reduces bacterial counts.[18] It is more effective than hand scaling in class II and class III furcae because of the elliptical action of the tip and the generation of vibrations which alter the plaque composition.[19,20]

Concerns associated with the use of ultrasonics include excessive cementum removal and residual root roughness. While both ultrasonic and hand instrumentation do remove cementum, this removal may be equivalent.[21] Furthermore, no significant difference exists in fibroblast reattachment to root surfaces.[22] Although root irregularities may serve as a nidus for bacterial plaque,[23,24] roughness does not adversely affect plaque and gingival indices, probing pocket depths, or loss of attachment.[25,26] Comparisons of surface roughness following instrumentation vary with some studies demonstrating superior smoothness with curets[24,27] while other studies show no differences.[28,29] These results have raised doubt as to the necessity for augmentive, hand-instrumented, root planing following ultrasonic debridement.[29]

An interesting effect with ultrasonics is the cavitational activity that occurs within the medicament in the new, local delivery, devices.[30] This continuous implosive action of vapor bubbles, upon exposure to an ultrasonic field, liberates forces resulting in plaque removal from tooth surface.[31]

The oscillating forces of ultrasonic instruments also enhance the associated chemical effectiveness of irrigants. Examples of this in the dental field include ultrasonic instrumentation in endodontic therapy[32] and ultrasonic immersion tanks for instrument cleaning prior to sterilization. Another effect is the large shear stresses (acoustic mainstreaming) which occur around the tip and are capable of causing cell disruption.[33] This fact warrants further investigation regarding its potential destructive effects on bacterial cell populations in supra- and subgingival plaque.

Ultrasonic instrumentation may afford some advantages over traditional debridement and its use should be further investigated for delivery of irrigants. One study[34] reported an increase in client tolerance by 77% when chlorhexidine was used in the ultrasonic as compared to the use of a traditional water coolant. This study also compared the original ultrasonic tip, with external coolant delivery, to the new tip design where the irrigant is propelled though the tip's end. The new 'focused spray' delivery system, with chlorhexidine, received the highest client-acceptance. This new tip oscillates at approximately double the displacement amplitude of its conventional counterpart. Given that client discomfort appears to positively correlate with higher energy forces, reduced energy with this new tip may prove important.

Clearly the evolution of ultrasonic instrumentation in the dental field is extensive. It has long been acceptable, even preferable, to undertake gross scaling with ultrasonics, however, the trend towards ultrasonic root planing remains plagued with concern over undue tooth root alterations. This study attempts to determine root effects following a regimen of ultrasonic delivery of chlorhexidine (compared to passive irrigation) on cylinder-shaped hydroxyapatite pellets (root

substitutes) for extended instrumentation times equaling ≥ 10 hours, yet ≤ 13 hours, over a period of 3 years. Surface analyses includes profilometry, scanning electron microscopy (SEM) and electron spectroscopy for chemical analysis (ESCA).

MATERIALS & METHODS

I) PREPARATION OF HYDROXYAPATITE PELLETS

CaPstrate™ (Bio-Interfaces, Inc., San Diego, CA) cylinder-shaped pellets (15mm in length x 5mm in width) were chosen for their similarity to tooth root morphology and relevance to dental enamel, bone mineral and many other naturally-occurring hard tissues. The supplier certifies CaPstrate™ as a calcium phosphate substrate composed of high-purity hydroxyapatite (HA) in a dense, highly crystalline form that meets ASTM (American Society for Testing Materials) Specification F-1185 for HA and meets ASTM Powder Diffraction File 9-432.

All pellets were first detergent-washed with Sparkleen™, (Fisher Scientific Company, Pittsburgh, PA), rinsed for one minute with distilled water, and autoclaved (Castle®, Sybron, Rochester, NY) for 16 minutes at 121°C. The pellets were further processed by one of two methods to achieve either an "ultra-clean" hydrophilic surface or a "smear layer-like" hydrophobic surface. These two extremes would likely encompass conditions encountered in the oral cavity. The "ultra-clean" hydrophilic surfaces were achieved by a gas plasma discharge treatment (GPT). The pellets were placed in a PLASMA® Cleaner (PDC-32G, Harrick Scientific Corp., Ossining, NY) for 2 minutes, removed with sterile stainless steel forceps, placed into a sterile petri dish, sealed, and used within one hour of preparation. The "smear layer-like", hydrophobic state was achieved by immersion for 20 minutes in a mixture containing 1 ml of octadecylsilane and 20 ml of chloroform. These octadecylsilane-treated pellets (ODS) were then air-dried, buffed with a Technicloth TX™ (Texwipe Company, Upper Saddle River, NJ) until glossy, and re-autoclaved prior to experimentation.

Specimens (N = 16) from the two pellet preparations (GPT or ODS) were subjected to ultrasonically-assisted irrigation or passive irrigation with 2% chlorhexidine for cumulative periods of one minute to five minutes (then tested for antimicrobial activity in an agar inhibition assay; results to be reported) each week for a period of 3 years, totaling ≥ 10 hours, yet ≤ 13 hours of instrument contact.

II) CAPSTRATE™ PELLET IRRIGATION

The irrigation of hydroxyapatite pellets was performed in a U.V. laminar flow hood (Hepaire®, Canadian Cabinets model #BM6-2A-49, Ottawa, Ontario) using aseptic techniques. The 2% chlorhexidine solution was prepared by dilution of 20% chlorhexidine gluconate (CH230 500, Wiler Fine Chemicals Ltd., London, Ont.) with sterile distilled water. The 2% solution was then added to the chamber of the Cavitron™ MED (Dentsply, International, York, P.A.).

Four (4) GPT-treated and four (4) ODS-treated pellets were placed into cone-shaped micro-centrifuge tubes, (Fisher Scientific Company, Pittsburgh, PA) for ultrasonically-assisted irrigation. The particular shape and size of centrifuge tube was selected because it could support the cylindrical pellet upright by having a tight fit at the 'bottom' while allowing a consistent, minimal space around the pellet 'top'. This loose fit at the top permitted the instrument tip to be inserted and rotated around the circumference of the hydroxyapatite pellet, similar in fashion to the ultrasonic instrumentation around a tooth in its sulcus. Chlorhexidine was delivered through a Cavitron™ MED insert (CM-135, Dentsply, International, York, P.A.) with the Cavitron™ set at maximum flow and ultrasonic power. The tip was constantly moved around the pellet circumference (with convex and/or lateral surface contact only) for periods of one to five minutes.

Four (4) GPT and four (4) ODS pellets were inserted into similar centrifuge tubes and passively exposed to 2% chlorhexidine solution by 'squirting' the medicament through the ultrasonic instrument at maximum flow with no ultrasonic power for cumulative periods of one to five minutes.

ANALYSIS OF SURFACE PROPERTIES

I) PROFILOMETRY

Profilometry allows measurement of surface texture and roughness. Measurements made for this research gave a visual surface profile and arithmetic average roughness height (Ra). Profilometry measurements were performed on a Universal Slide Linear Measurement Device (Spectre Systems, Sheffield Measurement Division, Dayton, OH). Each hydroxyapatite pellet was secured to the slide stage, and a diamond-tipped stylus (spherical radius of 0.01mm) positioned on the sample surface and adjusted to a standardized load of 0.5g. The slide stage was activated in a longitudinal direction so the stylus passed along the surface, recording surface texture in a graphic tracing. The results are reported as the arithmetic average roughness height (Ra).

Profilometry measurements were performed on sterile pellets (having undergone no instrumentation), and on GPT and ODS samples following ultrasonic irrigation.

II) SCANNING ELECTRON MICROSCOPY (SEM)/ ENERGY DISPERSIVE X-RAY SPECTROSCOPY (EDX)

With SEM, an electron beam scans a sample's surface, generating a variety of signals which produce images related

to the sample's elemental composition. The three signals which provide the greatest amount of information in SEM are the secondary electrons, backscattered electrons, and X-rays.

The secondary electrons emitted from atoms occupying the top surface produce an identifiable image of the surface. A high resolution image can be obtained because of the small diameter of the primary electron beam. The image contrast is also influenced by differences in the sample's morphology.

Backscattered electrons are primary beam electrons "reflected" off atoms in the solid. The image contrast results from differences of the atomic numbers of the elements in the sample. The image will therefore show the distribution of different chemical phases in the sample. As electrons are emitted from greater depths in the sample, the resolution in the backscattered image is not as detailed as seen with emitted secondary electrons.

Interaction of the primary electron beam with atoms in the sample results in emission of x-rays. The emitted x-rays have energies characteristic of the parent elements. Detection and measurement of the x-ray energy permits elemental analysis (Energy Dispersive X-ray Spectroscopy or EDX). EDX can provide rapid qualitative and sometimes quantitative analysis of elemental composition with a sampling depth of several microns. X-rays may also be used to form maps or line profiles showing the elemental distribution in a sample surface.

Hydroxyapatite cylinders were coated with a thin carbon layer and mounted securely to a conductive surface for analysis. SEM images were taken at 100, 500, 2,000 and 20,000 magnifications.

SEM was performed on sterile pellets (having undergone no instrumentation), GPT and ODS samples following, both passive and ultrasonic irrigation.

III) ELECTRON SPECTROSCOPY FOR CHEMICAL ANALYSIS (ESCA)

With ESCA, a sample is exposed to an incident, monochromatic x-ray beam. Core electrons emitted by the sample have a kinetic energy equal to the x-ray energy minus the binding energy of the electron and the work function of the instrument. The detected kinetic energies of the emitted electrons are converted to binding energies enabling element identification. Energy spectra record binding energy vs. surface percentage of each atomic type present. With the use of sensitivity factors, peak intensities can provide quantitative elemental surface compositions. ESCA analysis involves only the top 20-50 Å of the sample, making it an extremely surface sensitive technique. ESCA spectra can also provide information about an element's chemical environment or oxidation state. The chemical environment of an atom affects its binding electron strength. Atoms associated with different chemical environments produce peaks with slightly different energies, referred to as chemical shift.

ESCA was used to determine the surface atomic percentage of the elements present plus their method of bonding. Cylinders were analyzed as supplied and again after removal of 20 Å of material by ion sputtering. This was done to examine the proportions of bound chlorhexidine and/or other components from pellet instrumentation/assays that were present superficially and deeper into the specimens' pores.

ESCA measurements were performed on GPT and ODS samples following both passive and ultrasonic irrigation.

RESULTS

PROFILOMETRY

The Ra (arithmetic average roughness) determined by profilometry for the sterile control pellet was 0.33 mm; 0.77 mm for the GPT pellet; and 1.70 mm for the ODS pellet. The sterile control pellet Ra is consistent with the SEM photography which indicated the surface to be coated with debris that filled the surface excursions, primarily a calcium oxide layer which smoothed the envelope of the surface (Figure #1a). The GPT pellet Ra, following instrumentation indicated the "micro-rough" surface of pure and clean hydroxyapatite, with more, but smaller excursions than the sterile control pellet. The calcium carbonate lime-paste layer, which smoothed out the surface of the control pellet, was not observed (Figure #1b). The ODS pellet Ra was consistent with the roughness expected following an acid treatment (grains are revealed). It was congruent with microscopic results (SEM) that showed increased open surface area. The profilometer tracing did not follow the central 'surface line' but climbed and dipped as the stylus traveled along a rough surface and at times dropped into opened pores between sintered HA crystals (Figure #1c).

Although all three surface preparations showed different roughness averages consistent with the surface preparation, appear altered by the ultrasonic instrumentation. All measured consistently independent of the passive versus the ultrasonic instrumentation.

SEM/EDX

SEM examination of the sterile control pellet (Figure #2a, #2b) revealed varying amounts of surface debris with a coating that obliterated the milling streaks and clogged the pore spaces. The EDX showed a calcium/phosphorus ratio consistent with a carbonate coating contamination (Figure #2c). The GPT pel-

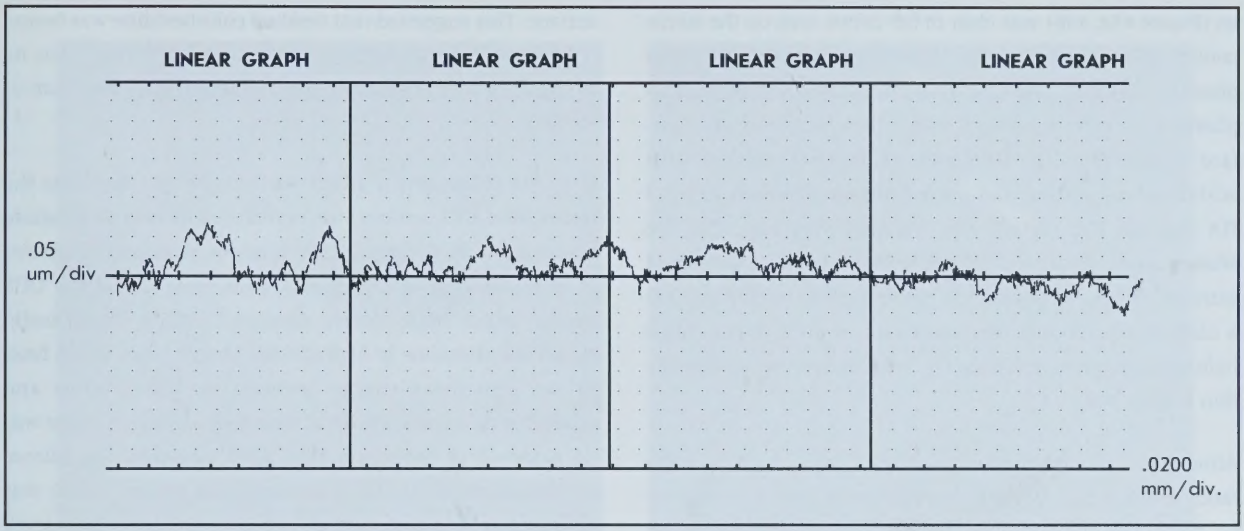


FIGURE 1(a): Profilometry Sterile Pellet

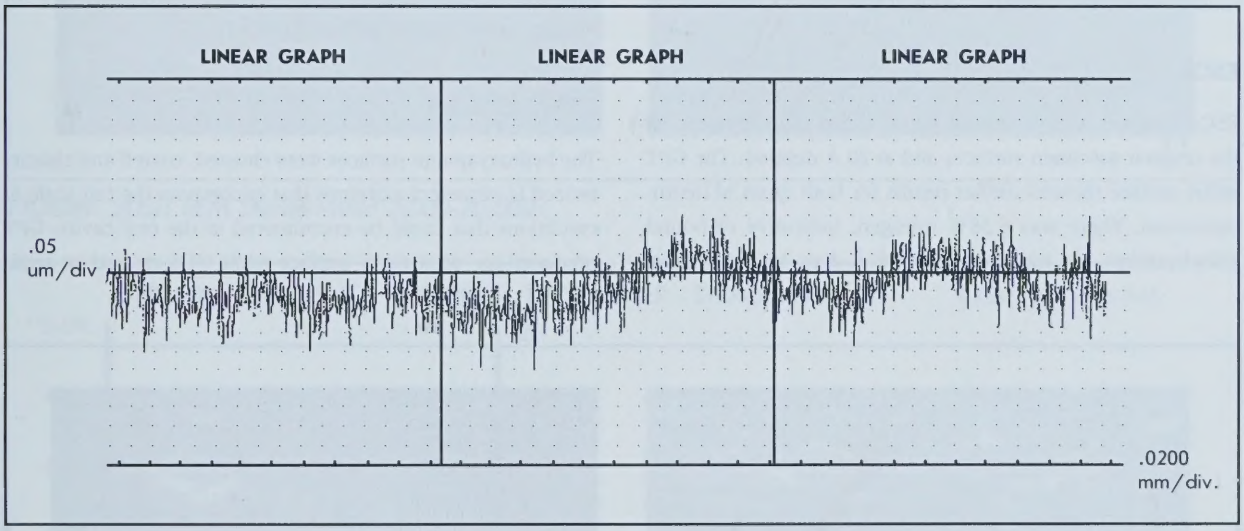


FIGURE 1(b): Profilometry GPT Pellet

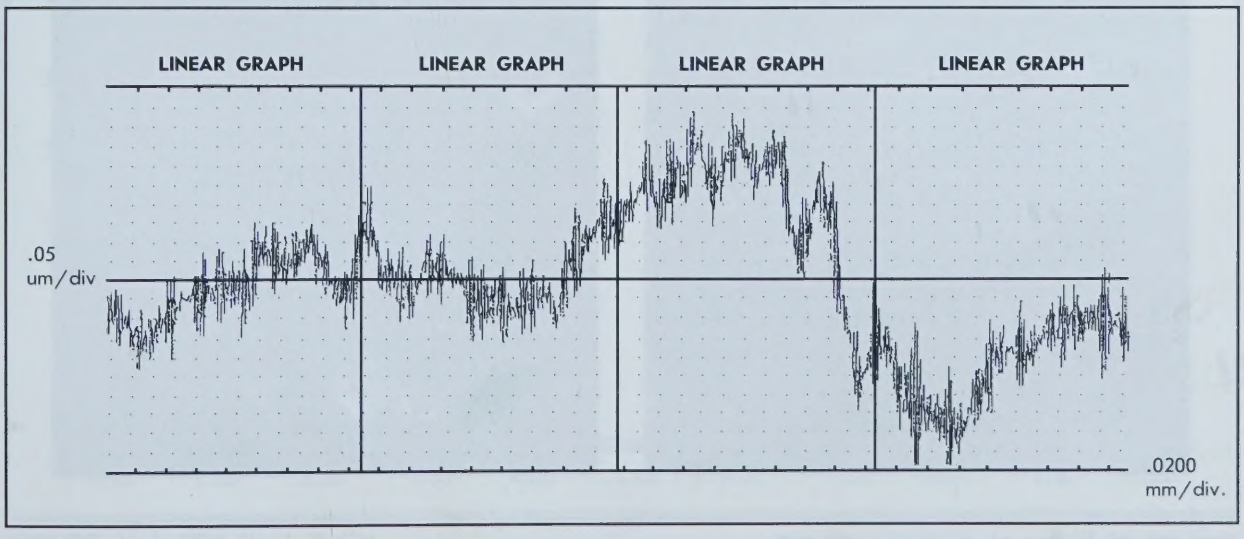


FIGURE 1(c): Profilometry ODS Pellet

let (Figure #3a, #3b) was clear of the debris seen on the sterile control pellet illustrating the cleansing capability of the gas plasma treatment. The EDX revealed a lower calcium/phosphorus ratio more consistent with a pure hydroxyapatite surface (Figure #3c). The ODS pellet (Figure #4a, #4b) with its acid-dissolved surface had open pores between the sintered HA crystals. The surface was originally very clean but the silane-coating (hydrophobic) deliberately applied, represented extreme organic contamination. Nevertheless the EDX showed a calcium/phosphorus ratio indicative of the hydroxyapatite bulk structure proving that the ODS coating layer was extremely thin (Figure #4c).

Although surface configurations for each type of pellet preparation are detectable there is no evidence of surface damage or no detectable stainless steel residue on any of the samples either prior to instrumentation or following either of the two modes of instrumentation.

ESCA

ESCA analysis was performed on GPT and ODS samples (at the original specimen surfaces and at 20 Å depths). The GPT pellet surface showed similar results for both types of instrumentation. There was 6.38% nitrogen, indicative of bound chlorhexidine, but no nitrogen at 20 Å deep to the original surface. This suggested that residual chlorhexidine was bound only to the external surface. (Tables #1a, #1b) There was no evidence of bound stainless steel residue (iron, chromium or nickel).

The ODS pellet carried 4.76% surface nitrogen, less than the hydrophilic GPT surface, for both types of instrumentation. However, at 20 Å deep 2.15% nitrogen remained compared to none detected in GPT pellets. This showed that the ODS pellets, which more closely simulated pellicle-coated teeth, stored chlorhexidine in hydrophobic spaces when it had been driven into these spaces (evident by SEM photos and profilometry) by the ultrasonic treatment. However, there was no evidence of bound stainless steel elements. For silicon, an indication of the ODS silane coupling group, 3.62% was detectable at the surface and 4.88% at the 20 Å deep level. The ODS coating observed at the 20 Å depth also indicated that the pores extended deep and acted as reservoirs for residual substances. (Tables #2a, #2b)

DISCUSSION

The hydroxyapatite surfaces were cleaned, coated and characterized to represent extremes that encompass the full scale of conditions that could be encountered in the oral cavity. GPT produced an 'ultra-clean' surface while ODS created an artifi-

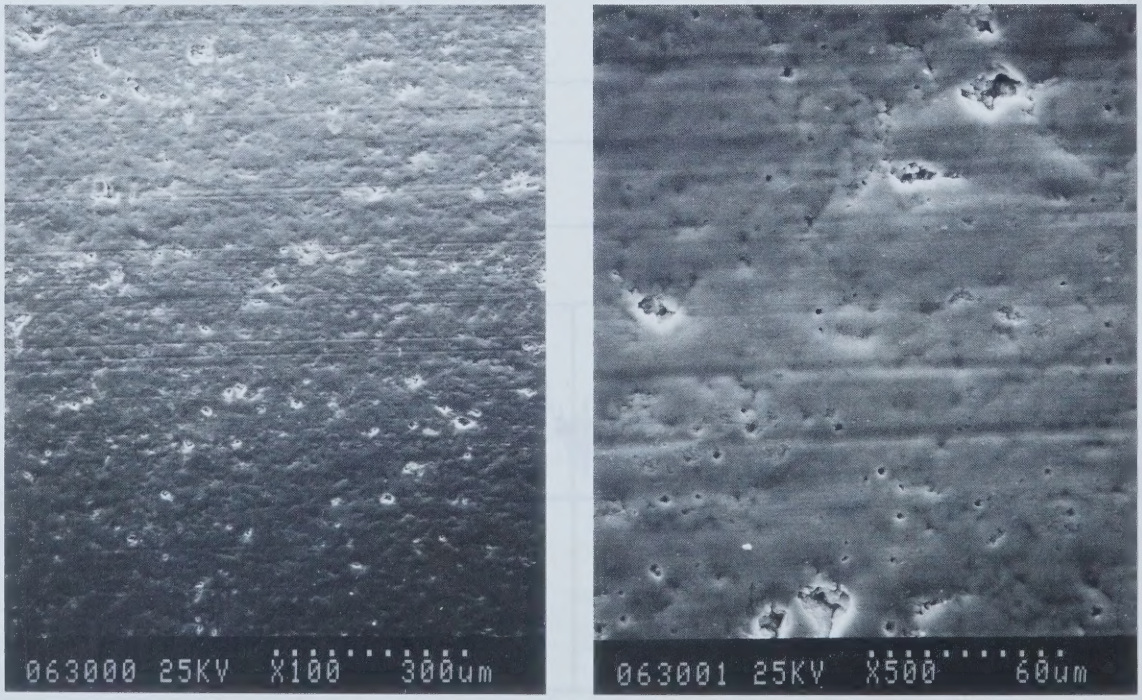


FIGURE 2(a): SEM Sterile Pellet 100-500x

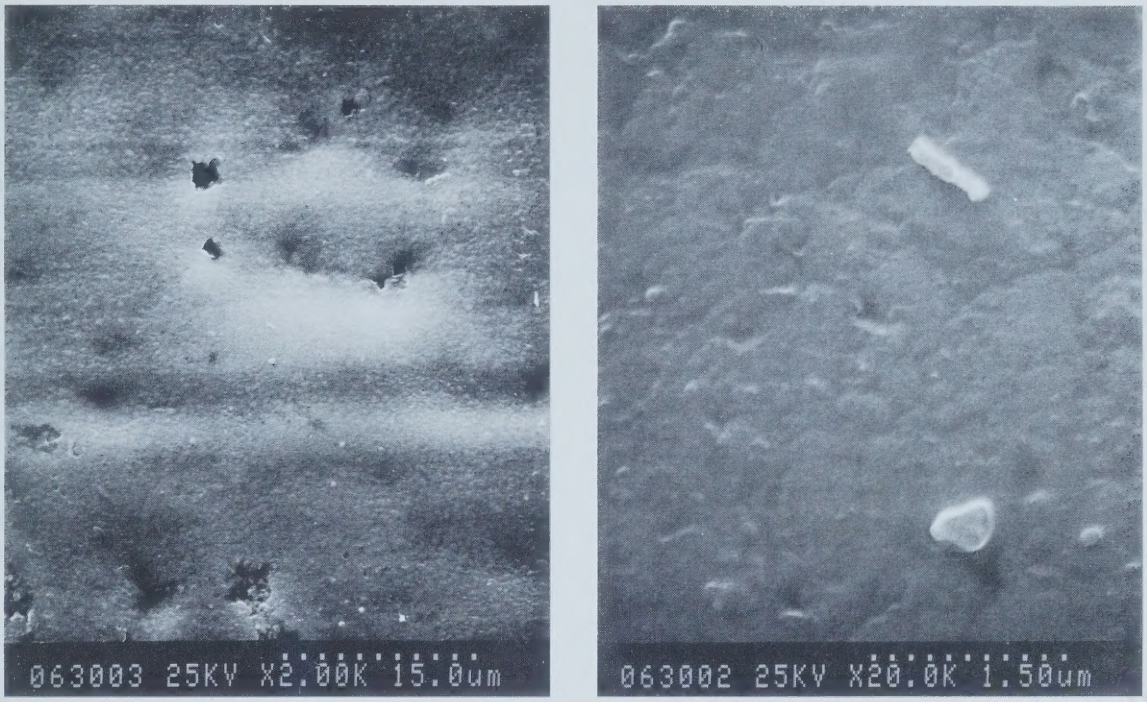


FIGURE 2(b): SEM Sterile Pellet 2,000-20,000x

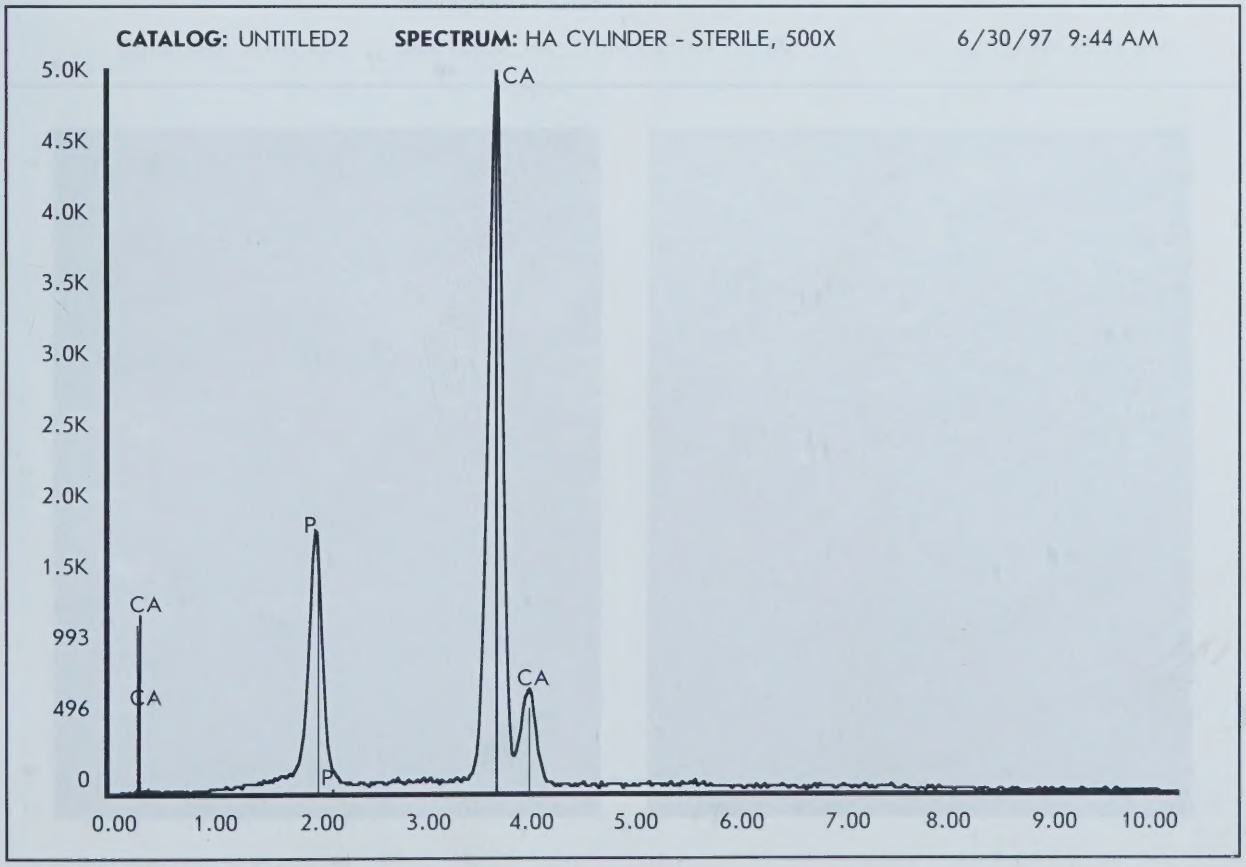


FIGURE 2(c): EDX Sterile Pellet

cial 'smear layer-like' surface. Smear layers and/or contamination in the mouth can arise from oil/lubrication from the turbine-driven handpieces, water lines, latex gloves, as well as from instrumentation.

The SEM and profilometry results substantiated that the non-instrumented sterile pellet was smoother due only to the calcium oxide layer which filled the surface excursions of the hydroxyapatite. When the pellet was ultra-cleaned with the gas plasma treatment and then ultrasonically instrumented the surface was decidedly more "micro-rough". However, that was due primarily to the removal of the calcium carbonate lime-paste layer left as a residue by the sterilization process, effectively exposing the bare hydroxyapatite surface of the pellet. Even the rough-sintered ODS pellet, which had a very porous morphology (offering niches where an instrument might snag and chip the surface), showed no indication of instrumentation gouges. SEM photography magnifications up to 20,000 times offer visual proof of the unaltered surfaces from each of the pellet preparations. ESCA data indicated that silicon, part of the ODS coating, was evident beneath the hydroxyapatite pellet surfaces. In the oral cavity, tooth surfaces are not ultra-clean but are somewhere between 'ultra-clean' and the 'smear layer-like' state, represented by the ODS-coated samples.

Although there remained a chlorhexidine residue that was both bound to the surfaces and embedded in the depths of the specimen, there was no evidence of the stainless steel elements, iron, chromium or nickel, from the instrument tip. This was substantiated by the ESCA data which detected nitrogen (significant to chlorhexidine) at the depths of the ultrasonically-irrigated pellets but none of the three stainless steel elements listed above.

CONCLUSIONS

Ultrasonic instrumentation/irrigation significantly improves the ability of chlorhexidine to penetrate into surface irregularities of hydroxyapatite-based tooth root surrogates.

Ultrasonic instrumentation (delivered from the lateral or convex sides of the tip) used cumulatively up to 13 hours on any of three prepared surfaces does not damage (chip, scratch or gouge) or leave stainless steel residue.

ACKNOWLEDGEMENTS

This paper was adapted from earlier works prepared under the guidance of R.E. Baier, professor and department head of SUNY at Buffalo Industry/University Center for Biosurfaces, School of Biophysics.

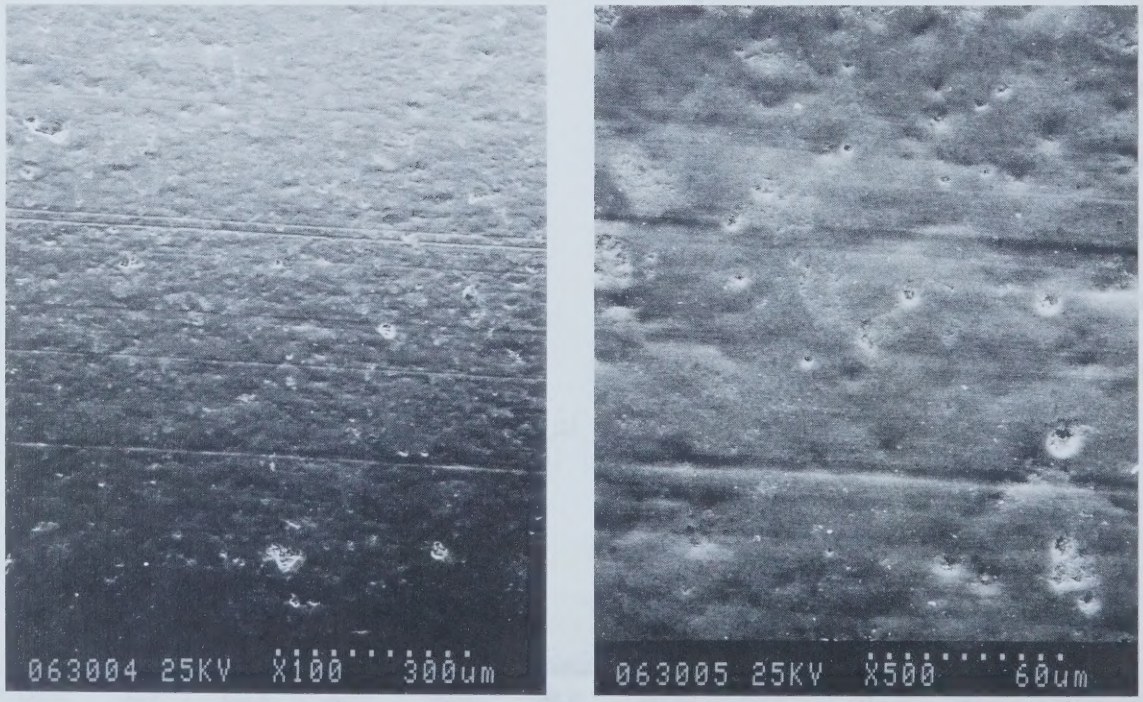


FIGURE 3(a): SEM GPT Pellet 100-500x

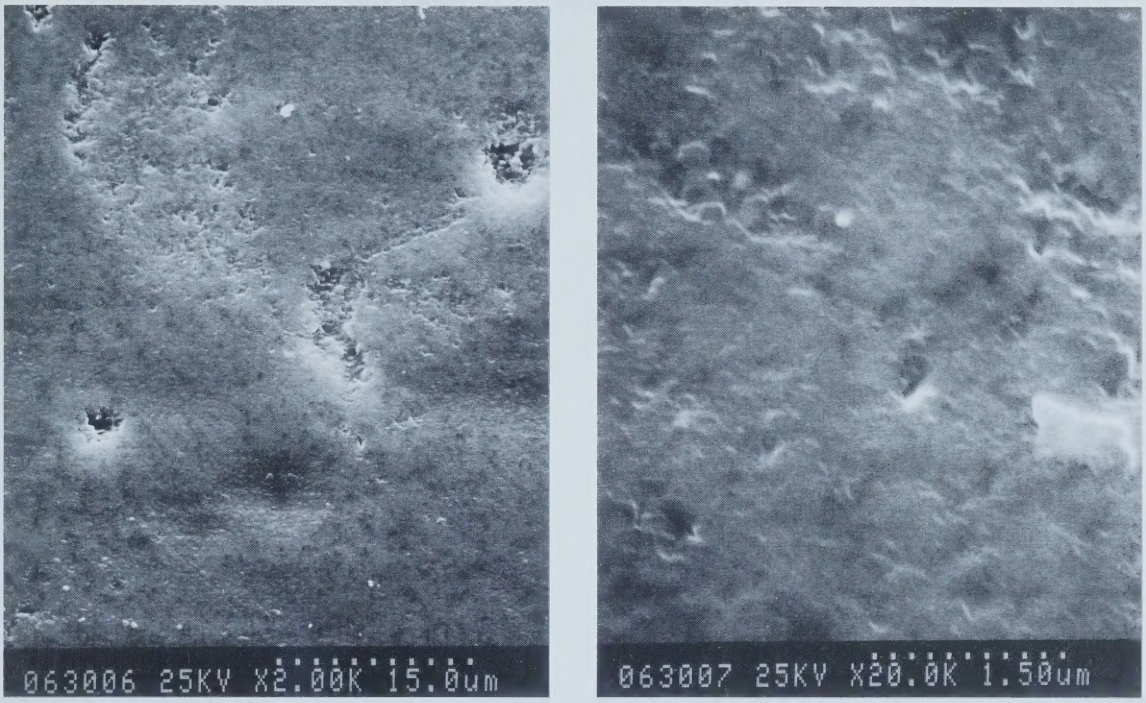


FIGURE 3(b): SEM GPT Pellet 2,000-20,000x

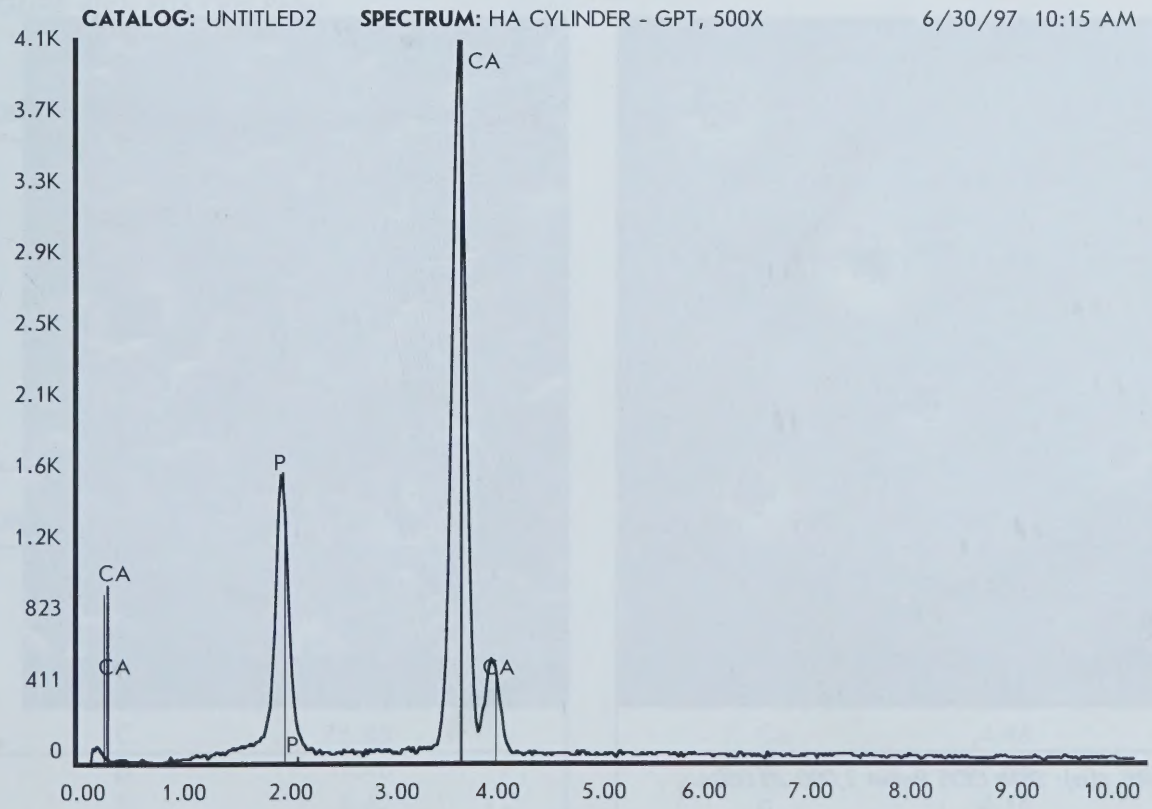


FIGURE 3(c): EDX GPT Pellet

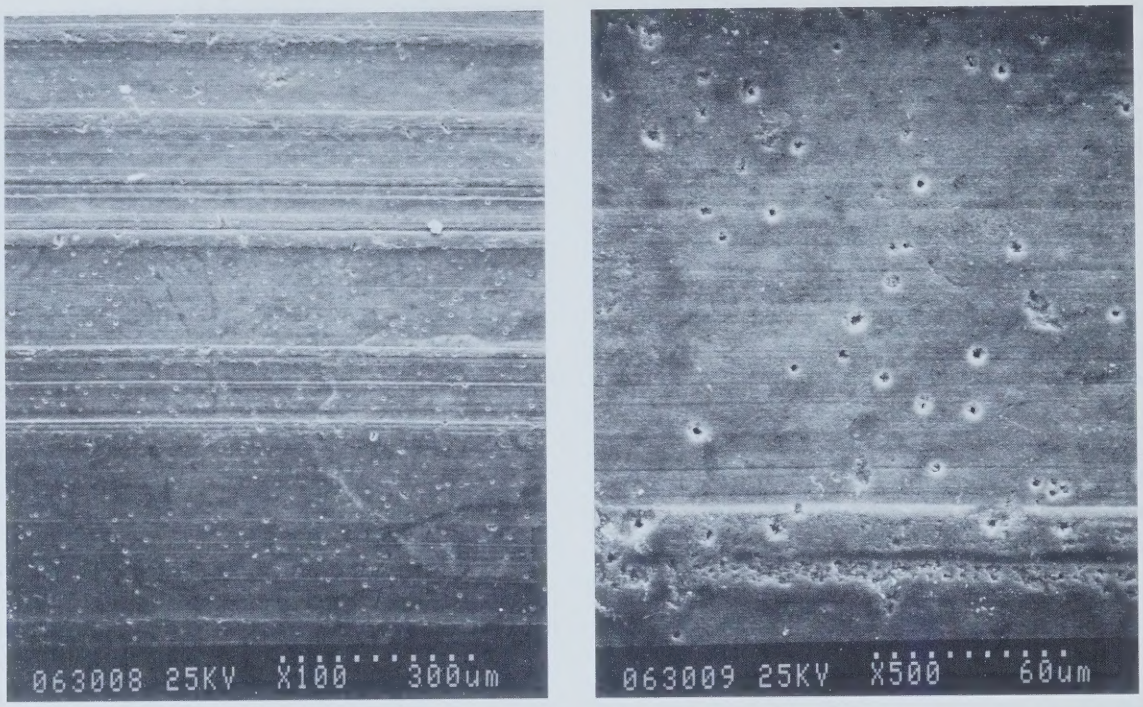


FIGURE 4(a): SEM ODS Pellet 100-500x

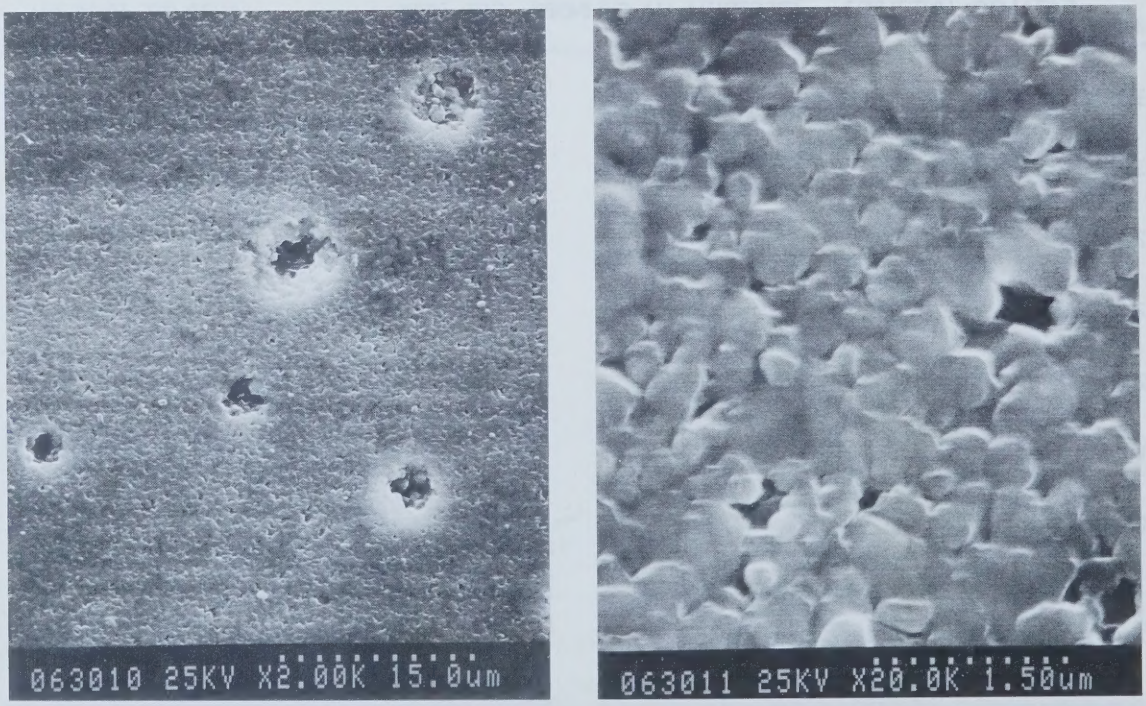


FIGURE 4(b): SEM ODS Pellet 2,000-20,000x

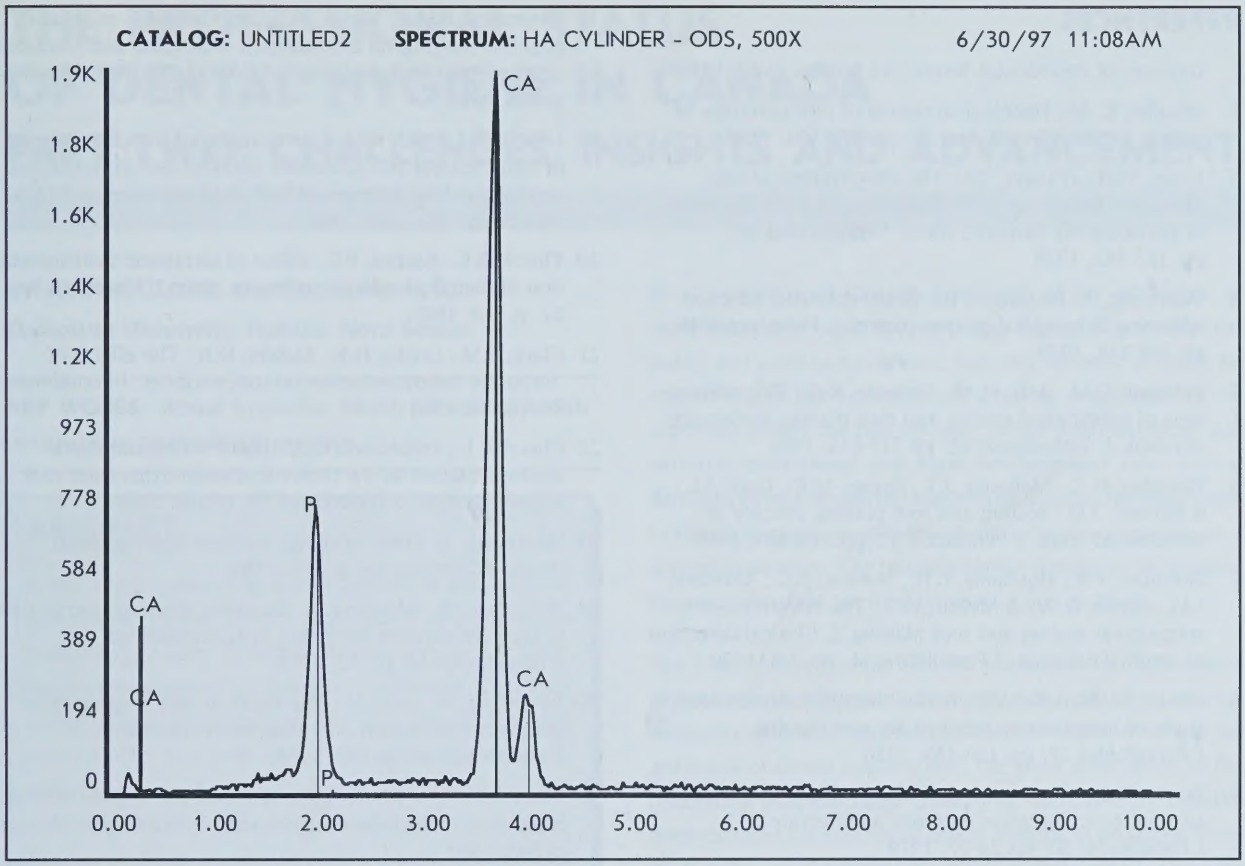


FIGURE 4(c): EDX ODS Pellet

TABLE 1(A): ESCA GPT Pellet Surface Composition

Element	Atomic %
0	26.67
Na	1.69
N	6.38
Ca	6.54
C	51.91
S	1.74
p	5.08

TABLE 1(B): ESCA GPT Pellet (20 Å) Composition

Element	Atomic %
Na	1.08
0	43.93
Ca	18.95
C	21.89
p	13.80
Cu	0.34

TABLE 2(A): ESCA ODS Pellet Surface Composition

Element	Atomic %
0	12.56
N	4.76
Ca	0.81
C	76.88
p	1.46
Si	3.62

TABLE 2(B): ESCA ODS (20 Å) Composition

Element	Atomic %
Cu	0.44
0	16.24
N	2.15
Ca	4.46
C	67.68
p	4.16
Si	4.88

REFERENCES

1 Glossary of Periodontal Terms: 3rd Edition, AAP, 1992

2 Schaffer, E. M.: Histological results of root curettage of human teeth. J Periodontal 27: pp. 296-300, 1956

3 Jones, W.A., O'Leary, T.J.: The effectiveness of root planing in removing bacterial endotoxin from the roots of periodontally involved teeth. J Periodontal 49: pp. 337-342, 1978

4 Waerhaug, J.: Healing of the dento-epithelial junction following subgingival plaque control.J. Periodontol 49: pp. 119-134, 1978

5 Rabbani, G.M., Ash, M.M., Caffesse, R.G.: The effectiveness of subgingival scaling and root planing in calculus removal. J. Periodontol 52: pp. 119-123, 1981

6 Fleischer, H.C., Mellonig, J.T., Brayer, W.K., Gray, J.L., & Barnett, J.D.: Scaling and root planing efficacy in multirooted teeth. J Peridontol 52: pp. 402-409, 1989

7 Sherman, P.R., Hutchens, L.H., Jewson, L.G., Moriarty, J.M., Greco, G.W., & McFall, W.T.: The effectiveness of subgingival scaling and root planing. I. Clinical detection of residual calculus. J Periodontol 61: pp. 3-8, 1990

8 Orban, B., Manella, V.B.: A macroscopic and microscopic study of instruments designed for root planing. J Periodontol 27: pp. 120-135, 1956.

9 Bower, R.C.: Furcation morphology relative to periodontal treatment; furcation entrance architecture. J Periodontol 50: pp. 23-27, 1979

10 Hal, H., Pannot, J.M., Vaidyanathan, T.K.: Scanning electron microscope evaluation of wear of dental curettes during standardized root planing. J Periodontol 60: pp. 320-324, 1989

11 Parkes R.B., Kilstad, R.A.: Effects of sterilization on periodontal instruments. J Periodontol 53: pp. 434-438, 1982

12 Badersten, A., Nilveus, R., Egelberg, J.: Effect of nonsurgical periodontal therapy. I. Moderately advanced periodontitis. J Clin Periodontal 8: pp. 57-72, 1982

13 Hill, R.W., Ramfjord, S.P., Morrison, E.C., Appleberry, E.H., Caffesse, R.G., Kerry, G.J., Nissle, R.R.: Four types of periodontal treatment compared over two years. J Periodontal 52: pp. 655-662, 1981

14 Philstrom, B.L., Mc Hughes, R.P., Oliphant, T.H., Oritz-Campos, C.: Comparison of surgical and nonsurgical treatment of periodontal disease. A review of current studies and additional results after 61/2 years. J Clin Periodontal 10: pp. 524-541, 1983

15 Badersten, A., Nilveus, R., Engelberg, J.: Effect of nonsurgical periodontal therapy II Severely advanced periodontitis. J Clin Periodontol 11: p. 63, 1984

16 Torfason, T., Kiger, R., Selvig, K., Egelberg, J.: Clinical improvement of gingival conditions following ultrasonic versus hand instrumentation of periodontal pockets. J Clin Periodontol 6: pp. 165-176, 1979

17 Holbrook, T.E., Low, S.B.: Power-driven scaling and polishing instruments. Clark's Clinical Dentistry 3: pp. 1-24, 1991

18 Osterwaal, P.J.M., Matee, M.I., Mikx, F.H.M., et al: The effect of subgingival debridement with hand and ultrasonic instruments on the subgingival flora. J Clin Periodontol 14: p. 528, 1987

19 Leon, L.E., Vogel, R.I.: A comparison of the effectiveness of hand scaling and ultrasonic debridement in furcations as evaluated by differential dark-field microscopy. J Clin Periodontol 58: p. 86, 1987

20 Thilos, B.E., Baehni, P.C.: Effect of ultrasonic instrumentation of dental plaque microflora *in vitro*. J. Periodont Res 22: p. 518, 1987.

21 Clark, S.M., Grupe, H.E., Mahler, D.B.: The effects of ultrasonic instrumentation on root surfaces. J Periodontol 39: p. 135, 1968

22 Checchi, L., Pelliccioni, G.A.: Hand versus ultrasonic instrumentation in the removal of endotoxins from root surface *in vitro*. J Periodontol 59: p. 398, 1988

23 Waerhaug, J.: Effect of rough surfaces upon gingival tissue. J Dent Res 35: p. 323, 1956

24 Wilkerson, R., Mayburg, J.: Scanning electron microscopy of the root surfaces following instrumentation. J Periodontol 44: p. 559, 1973

25 Rosenberg, R., Ash, M.: The effect of root roughness on plaque accumulation and gingival inflammation. J Periodontol 45: p. 146, 1974

26 Khatiblou, F.A., Ghodssi, A.: Root surface smoothness or roughness in periodontal treatment. J Periodontol 54: p. 365, 1983

27 Stende, G.W. & Schaffer, E.M.: A comparison of ultrasonic and hand scaling. J Periodontol 32: p. 312, 1961

28 Pameijer, C.: Surface characteristics of teeth following periodontal instrumentation. A scanning electron microscope study. J Periodontol 43: p. 628, 1972

29 Jones, S., Lozdan, J., Boyde, A.: Tooth surfaces treated *in situ* with periodontal instruments: Scanning electron microscopy study. Br Dent J 132: p. 57, 1972

30 Walmsley, A.D., Laird, W.R.E., Williams, A.R.: A model system to demonstrate the role of cavitational activity in ultrasonic scaling. J Dent Res 63: pp. 1162-1165, 1984

31 Walmsley, A.D., Laird, W.R.E., Williams, A.R.: Dental plaque removal by cavitational activity during ultrasonic scaling. J Clin Periodontol 15: pp. 539-543, 1988

32 Walmsley, A.D.: Endosonics: The need for scientific evaluation. Int Endodont J 20: pp. 105-111, 1987

33 Walmsley, A.D., Laird, W.R.E., Williams, A.R.: Intravascular thrombosis associated with dental ultrasound. J Oral Pathol 16: pp. 256-259, 1987

34 Chapple, I.L.C., Walmsley, A.D., Saxby, M.S., Moscrop, H.: Effect of subgingival irrigation with chlorhexidine during ultrasonic scaling. J Periodontol 63: pp. 812-816, 1992

35 Baier, R.E., Gott, V.L., Feruse, A.,: Surface chemical evaluation of thromboresistant materials before and after venous implantations. Trans Amer Soc Artif Organs 16: p. 50, 1970

36 Amstutz, H.: Surface Texture: The Parameters,Warner & Swasey Co., Sheffield Measurement Div, Dayton OH, 1985

THE PROFESSIONAL STATUS OF DENTAL HYGIENE IN CANADA

PART TWO: CHALLENGES, INSIGHTS AND ADVANCEMENT

BY JOANNE CLOVIS, Dip.D.H., B.Ed., M.Sc.
Dalhousie University, Halifax, Nova Scotia

KEY WORDS: dental hygienist, health personnel, health occupations, professional practice

ABSTRACT

Some forces influencing dental hygiene in Canada have contributed to the present high degree of professional maturation; others challenge dental hygiene's achievement of recognition as a distinct profession. This two-part analysis of dental hygiene in Canada describes social forces that both shape the current professional status and create barriers to change. The current status is not satisfactorily explicated by the attribute theory of professions and may be more definitively explained by other social theories. Part One illustrated the institutional and legal developments that have moved dental hygiene towards the status of a mature profession and shaped the education, regulation, and practice of dental hygiene. Part Two examines the critical issues challenging the professional status of dental hygiene. The fundamental issues are the nature of the work of dental hygiene and its relationship to that of other professions, the continuing dominance of the traditional professions particularly in health care, and the gendered nature of professions such as dental hygiene. These issues are expressed in Canada as an underdeveloped articulation of dental hygiene's professional work, the professional dominance of dentistry, and the feminized character of dental hygiene with attendant effects. An examination of these challenges produces useful insights and directs theoretical interpretation and professional activity away from attribute theory and towards other theoretical interpretations of work, occupations, and power. These diverse interpretations of dental hygiene as a profession are compatible with the disparate scholarship on professions and impart new meaning to the profession of dental hygiene. The application of these more contemporary theoretical interpretations can advance the construction of a new reality for dental hygiene with vital public and political recognition.

Dental hygiene in Canada has many of the attributes of professions, and some to a very high degree. The anticipated public and political recognition have not followed as might be expected from the explication of attribute acquisition by the attribute theory of professions. While both internal and external institutional and legal developments have moved dental hygiene towards the status of profession, the challenges to dental hygiene are effective in limiting its recognition as a distinct profession. The multiple interpretations of professions by social theorists are fundamental in this analysis.

Part One of this two-part article examined the high degree of professional maturation demonstrated by the professional attributes of dental hygiene in Canada. A comparison of the attributes of dental hygiene with the eight dimensions of the profession-nonprofession continuum identified by Pavalko demonstrated the success of dental hygiene in acquiring these traits and moving towards the status of profession.[1] Although most of the professional attributes that Canadian dental hygiene has acquired were developed from within the profession, the external environment has also contributed to dental hygiene's status through the evolution of new paradigms of health and health care and shifts in professional regulation.

In Part Two, an examination of the challenges to the recognition of dental hygiene as a profession produces insights which direct theoretical interpretation towards contemporary theories of professions which focus on power and control, and which address issues of interoccupational conflict, professional dominance, class and gender. The external conditions effectively limiting further professional development in dental hygiene are critical challenges which could be perceived as barriers if prevailing social conditions were static. Social trends, however, are dynamic processes and fluctuating states, suggesting that the term *challenges* is more appropriate and realistic than the term *barriers*. Critical issues challenging the professionalism of dental hygiene are the nature of the professional work of dental hygiene and its relationship to that of other professions, the continuing dominance of the traditional professions particularly in health care, and the gendered nature of professions such as dental hygiene.

THE PROFESSIONAL WORK OF DENTAL HYGIENE

Professionals have privileged positions within society and in the labour strata. Professional work is the unique expertise and skill claimed by an occupational group and sanctioned by society. Professional relationships exist at the level of the individual client and also at the level of the community, particularly with governments and among other professions. The proliferation of health care occupations, each claiming specialized knowledge and expertise, has resulted in a relatively rigid division of labour. Each occupation attempts to relate its work directly to a system of knowledge to formalize and legitimate its work.

The dominant model of professional knowledge, "technical rationality", claims that professional activity is problem solving by applying scientific theory and technique.[2] According to this model the systematic knowledge base of a profession has four essential properties; it is specialized, firmly bounded, scientific, and standardized. Three components of professional knowledge are traditionally described as an underlying discipline or basic science, an applied science from which diagnostic procedures and problem-solutions are derived, and a skills or attitudinal component that concerns the performance of services using the basic and applied knowledge.[3] Aspiring professions such as dental hygiene may question whether their knowledge base has the requisite properties and whether it is applied appropriately to the everyday problems of practice.[2] Implicit in the self-examination is an analysis of the knowledge base of dental hygiene to determine whether it is scientific, firmly bounded by theory and research, specialized and standardized.

In the view of Abbott, a contemporary social theorist, "professions are exclusive occupational groups applying somewhat abstract knowledge to particular cases"[4]. The central phenomenon of professional life is the link between a profession and its work, a linkage Abbott terms jurisdiction.[4] Each profession is bound to a set of tasks or problems by jurisdictional ties, and the tasks are vulnerable to competition and interference. It is the knowledge system and its degree of abstraction that allow occupations to compete among professions and to claim professional status. This concept has exceptional utility in understanding the occupational issues between emerging and established professions such as dental hygiene and dentistry.

According to Abbott, problems addressed by professional work may be either objective or subjective in nature.[4] Professional tasks which address objective problems created by natural or technological imperatives are most resistance to reconstruction. The objective foundation for the work of dental hygiene is the mouth, and the term 'dental hygiene' specifies the principal work which may be interpreted as cleanliness and health of the mouth. The purposeful tasks of dental hygiene are described as a process of care rather than a listing of single items.[5] The evolution of dental hygiene to a complex set of objective tasks is illustrated by this recent description of the work of dental hygiene as "the study and management of the preventive oral health behaviours in which human beings engage".[6] The objective foundation of the professional work of dental hygiene is distinct from the subjective foundation. The objective foundation of dental hygiene may be considered the *'what'* of dental hygiene whereas the subjective foundation is the *'how'*.

In Abbott's conceptual framework, the subjective foundation of professions is expressed as classifying client problems, reasoning about them, and taking action on them — the acts of professional practice formally termed *diagnosis*, *inference*, and *treatment*.[4] It is within this sequence of logic and events that tasks or professional work exhibit the subjective qualities that are the cognitive structure of a jurisdictional claim by a profession — the *'how'* of the profession. In health care and among other professions such as law and accounting, routine treatment is often delegated to subordinates to carry out. Dental hygienists were originally delegated by dentists to carry out work making up preventive regimen.[5] Increasingly dental hygienists claim their own diagnosis, inference, and treatment as being different from that of dentists and legitimate in their own right.

Although not permitted by regulation to act in a case-finding capacity dental hygienists are educated to assess a client's dental hygiene needs.[5-9] *Diagnosis* in the widely used Canadian model of dental hygiene practice is conceptualized as part of the component of assessment and preceding the planning of dental hygiene care.[5] The rationale accepting dental hygiene diagnosis as an existing and necessary function has been expressed for more than two decades.[10] Following formulation, validation, and recording of the diagnosis, the dental hygienist identifies and performs appropriate interventions and strategies to achieve goals. This stage is the implementation of *treatment*. Dentists may provide client care typically provided by dental hygienists, but the ongoing demand for dental hygienists suggests that most dentists prefer to delegate these responsibilities to them. At least one set of quality assurance practice assessment standards notes the clear superiority of preventive services by dental hygienists.[11] Between diagnosis and treatment is the more ambiguous stage of *inference*. In the case of dental hygiene, inference appears to be that proc-

4. Abbott, A.D.: The system of professions: An essay on the division of expert labour. Chicago: The University of Chicago Press, 1988, p. 8
6. Darby, M., Walsh, M. eds: Dental hygiene theory and practice. Philadelphia: W. B. Saunders Company, 1994, p. 7

CDHA ACHD

Explorer

KEEPING DENTAL HYGIENISTS IN TOUCH FROM COAST TO COAST

NUMBER 1 PUBLISHED BY THE CANADIAN DENTAL HYGIENISTS ASSOCIATION MAY/JUNE 2000

"O! This Learning What a Thing It Is'

PRESIDENT'S MESSAGE

LYNDA MCKEOWN
RDH, HBA, MA

Marlene said to me, "Jenny is coming to town in February."

About two years ago, Dr. Bloom mentioned she was going to bring Jenny Thomas into her practice to provide the program 'Value Added Team Organization and Hygiene Integration'. Well, in her mind, the time had come, and the date was set.

Communication began between the two of them. Various materials were needed and certain hand and ultrasonic instruments had to be ordered.

Jenny sent out questionnaires asking a number of questions of the dental hygienists. She needs to assess the type of dental hygiene care that the practice provides. Also, she wants to hear about dental hygienists' concerns. Sometimes, there are 'environmental barriers' to maintaining dental hygiene standards of practice.

"Marlene, I am hearing 'rumbles' from the dental hygienists. Have you called them together to discuss what the program involves?" I asked.

She replied, "I have spoken with my senior dental hygienist."

"Better get all the 'troops' together. They are very unsettled and puzzled about this program," I said. "Mothers have child care concerns. Schedules are set out that involve longer than usual work days." (Jenny thinks everybody has her level of energy.)

The dental hygienists met with Dr. Bloom. Naturally, everyone was apprehensive. What is this program going to involve? Are we going to be watched? We are providing good service - why do we have to change?

"This is an opportunity to learn the latest techniques, and adapt the current theories," she said. "I am bringing the continuing education program 'on site' at my expense." (Of course, it was her decision too.)

Now she is wondering, "Why can't they appreciate what I'm doing?"

"O! This learning, what a thing it is!"

We fear the unknown. We fear failure! Change - how we hate to change routines! We all suffered disturbed sleep patterns prior to Jenny's arrival, due to various levels of anxiety.

The four days were long and intensive, but valuable. We had opportunities to work together, administration, dental assistants, dental hygiene coordinators, dental hygienists and dentists. It is essential that we all understand the documentation and the various disease processes, so we can communicate with the patients/clients.

The dental hygienists, facilitated by Jenny's leadership, discussed fully utilizing dental hygiene skills and knowledge. We examined clients' mouths, provided education about their diseases, planned therapies, then implemented scaling, ultrasonic, root planing and root therapy techniques. Talk about 'pooped out'!

The last afternoon, staff members shared their new found knowledge with each other, through presentations. This was very fearful for some, but it did not show in the presentation. Growth through action is painful but effective.

Continued on page 2...

Inside

B.Sc. Program at University of Alberta 2

Peridontal Disease and Low Birthweight: A Critical Link? 3-6

Using Millipore Samplers in Dental Settings 7

CDA Guidelines on Dental Unit Waterline Maintenance 7

Classifieds 8

Dental Hygienists to have B.Sc. Program at University of Alberta

On March 24th, the University of Alberta (U of A) informed the Alberta Dental Hygienists' Association (ADHA) that it has agreed to become the first post-secondary institution in Canada to offer a full-time B.Sc. in Dental Hygiene. The new program is on track to begin in September - in just five months time. At the same time, the University will begin a degree completion program for diploma graduates who wish to upgrade to baccalaureate status.

This commitment by the U of A is the result of close to 30 years of negotiation and effort from many dental hygiene colleagues and the ADHA.

"We are ecstatic to be able to tell you about this major breakthrough for our profession, here in Alberta," said Stacy Mackie, President, ADHA. "It is even more rewarding and gratifying, given the frustrations dental hygienists have felt in the past. There were many times when we believed a degree program was imminent, only to be disappointed with a setback."

The formal news was conveyed to the Association in a letter to Executive Director, Josephine Juchli from Dr. Doug Owram, Vice President, Academic at the University.

"The implementation of the B.Sc. Program is a key component of the Department of Dentistry's Business Plan and I look forward to its success," wrote Dr. Owram, "...the B.Sc. program in Dental Hygiene at the University of Alberta has been approved. You have my assurance that we are proceeding with this program which will begin this September, 2000."

The new program, to be planned and directed by Professor Jan Pimlott, Director of the Dental Hygiene Department at the University, will lend new credibility to the dental hygiene profession and be an exciting incentive to those looking at entering the profession. It will also serve to heighten public interest in the dental hygiene occupation.

"We have worked long and hard to bring this B.Sc. to fruition for our members, and I want to pass on my congratulations to everyone on the team for what has been achieved," added Stacy Mackie. "I can't express how happy I am to finally tell you of this long-sought success."

"This news will be a special boost to our members, and we will certainly be celebrating at our annual conference in Calgary at the end of this month," said the ADHA President.

Alberta dental hygienists have collectively worked to achieve a B.Sc. in Dental Hygiene status since the early 1970s.

Submission compliments of Alberta Dental Hygienists' Association (ADHA)

"O! This Learning What a Thing It Is'

Continued from page 1

There were tense, intense and emotional moments. However, we persevered and survived the four days.

Now we have to initiate the program. It will take time to implement the changes. We will struggle with remembering to talk about gingival, periodontal and jaw bone disease instead of cleaning. No doubt, we will slip. But we will pick ourselves up. Jenny acts as a 'safety net'. She will be back to evaluate our progress. It may take us a while to learn to:

- believe in ourselves and our oral health services,
- convey confidence in our therapies and course of maintenance,
- teach clients to own and take control of their disease.

I asked my colleagues what you as readers might learn from our experience. One of my colleagues said, "Gingivitis and periodontitis are the patient's disease. With the process of co-diagnosis, the patient/client learns to take ownership and responsibility for his/her disease. We can provide the initial examination, education and choices of therapy. Then, it is her/his responsibility to decide to proceed with the therapies, based on need, not the financial assistance provided by the insurance companies. Evaluation and maintenance are built into the program. We provide the 'safety net', and 'catch them' if:

a) they 'fall off' their home care, or

b) other influencing factors reactivate the disease."

Although the dental hygienists did not initiate this continuing education, we participated in a valuable learning experience. Now, it is our responsibility to take ownership of the program. We have the keys. With these 'keys', we can provide new opportunities for clients' health.

O! This learning, what a thing it is!

News

The CDHA Board of Directors wishes to welcome Charlene Hamill as the new Director to the CDHA Board, representing the Federation of Dental Hygiene Regulatory Authorities (FDHRA). In addition to her work as Dental Hygiene Registrar for the Saskatchewan Dental Hygienists Association, she also practices two days a week in a periodontal practice in Regina, Saskatchewan.

CHARLENE HAMILL

Peridontal Disease AND Low Birthweight: A Critical Link?

By Heather L. Jared, RDH, MS; Susan Lieff, MSW, MPH, PhD; Rebecca S. Wilder, RDH, MS; and Steven Offenbacher, DDS, PhD, MMSc

Reprinted from *Access, March 1999* with permission from the American Dental Hygienists Association

Introduction

Do you remember when the dental hygienist's primary concerns with pregnant patients were hormonal gingivitis and no radiographs during the first trimester? Times have changed and so has the evidence linking chronic oral infection (e.g., periodontal disease) to overall systemic health. Recently, maternal periodontal infection has been studied as a possible risk for spontaneous preterm birth (SPB) and low birth-weight infants. Studies conducted on animals and small numbers of humans suggest that periodontal infections can impair fetal growth and release biochemical medicators known to cause preterm delivery in humans.[1] The purpose of this article is to review the theory pertaining to periodontal disease and low birthweight (LBW) and discuss the potential impact on the dental hygienist in clinical practice. A glossary of terms is included to facilitate understanding of the terminology used in this area of science (Figure 1).

Concerns about Low Birthweight and Preterm Births

During the last decade, there has been substantial progress in determining factors that contribute to poor birth outcomes. While the U. S. birth rate has declined steadily since 1987, the percentage of mothers receiving prenatal care rose to its highest level in 1996, following a decade of no improvement. Tobacco use during pregnancy, which predisposes the mother to a twofold risk of delivering a LBW infant, has decreased continually since 1989. The neonatal mortality rate has declined steadily over the last four decades, in large part due to improvements in neonatal intensive medical care.[2]

Despite these advances, preterm birth (PTB) (<37 weeks) and LBW (<2,500 grams or 5 1/2 pounds) have not shown a corresponding decline, and remain as the two most significant predictors of infant health and survival. In fact, the rate of preterm deliveries has risen 17% since 1981, and remains unchanged since 1995, when 11% of all births resulted in a preterm infant. Similarly, the proportion of infants born at <2,500 grams has increased from 6.7% of all births in 1984, to 7.4% in 1996.[2] While trends in infant mortality rates over time reflect an overall decrease in risk for death, babies born too soon and too small are at much greater risk when compared to heavier infants of later gestations. Preterm infants are nearly seven times more likely to die before their first birthdays than are term infants. In 1996, the mortality rate among infants weighing less than 2,500 grams was 17.4 per 1,000 births, in contrast to 2.8 per 1,000 for infants weighing more than 2,500 grams.[2] Preterm infants have an increased risk of numerous medical disorders such as cerebral palsy, blindness, respiratory conditions, and other developmental disabilities.[3] This frequency of medical disorders represents a large social and economic problem. In 1993, an estimated one billion dollars was spent on medical problems associated with PTB and LBW infants and their mothers.[4-11]

Clearly, PTB and LBW infants account for a large proportion of maternal and neonatal mortality and morbidity. Further success in decreasing these statistics may require a shift in focus from provision of tertiary care to identification and prevention of factors associated with its occurrence.

The Role of Inflammatory Mediators in Pregnancy and Periodontal Disease

Cytokines are soluble proteins released by cells in the body to regulate bodily functions. The central role of a cytokine is to control remodeling of tissues that occurs with infection, wound healing, and inflammation. Thus, cytokines include mediators of inflammation and growth factors. Cytokines may act locally in the tissue or they may circulate beyond the organ of origin to perform their central role of remodeling tissues.[12] The cytokines most often referred to in studies involving periodontal disease and LBW are interleukin-1 (IL-1), interleukin-6 (IL-6), tumor necrosis factor alpha (TNF-∝), and interleukin-1b (IL-1b). In addition, lipid mediators of inflammation, such as prostaglandin E_2 (PGE_2), play an important role in periodontal inflammation and bone loss.

> *Despite advances, preterm birth and low birthweight have not shown a decline, and remain as the two most significant predictors of infant health and survival.*

GLOSSARY OF TERMS

FREQUENTLY USED IN STUDIES ON LOW BIRTHWEIGHT AND PERIODONTAL DISEASE

Arachidonic acid (ARA) -
a fatty acid found in mammalian cells that is the precursor of prostaglandin E_2.

Bacterial vaginosis (BV) -
a common vaginal infection in reproductive women. Generally there is an overgrowth of several bacteria, usually Gardnerella vaginalis and anaerobic rods and cocci.

Biofilm -
a matrix-enclosed bacterial population adherent to each other and/or surfaces or interfaces.

Cytokine -
soluble proteins (nonantibody protein) released by living cells of the host, which act as intercellular mediators and signaling molecules.

Inflammatory mediators -
host-produced molecules which induce inflammation by interacting with specific host cells. The term includes certain cytokines and inflammatory lipids.

Interleukin 1-b (IL 1-b) -
a potent inflammatory cytokine

Low birthweight (LBW) -
birthweight less than 2,500 grams (5 pounds, 8 ounces)

Lipopolysaccharide (LPS) -
also known as endotoxin, a substance on the outer cell wall which is toxic to living tissue.

Matrix metalloproteinases (MMP) -
an enzyme that mediates destruction of the extracellular matrix of the gingiva and periodontal structures.

Preterm birth (PTB) -
birth before 37 weeks' gestation

Preterm labor (PTL) -
labor prior to 36 weeks' gestation

Preterm premature rupture of membranes (PPROM) -
rupture of membranes prior to 36 weeks of completed gestation

Prostaglandin E_2 (PGE_2) -
a lipid mediator of inflammation.

Spontaneous preterm birth (SPB) -
PTB as a consequence of either PPROM or PTL, or other factors.

Tumor necrosis a (TNF-∝) -
a cytokine mediator of inflammation

During normal pregnancy, hormones and locally acting cytokines play an important part in regulating the onset of labor, uterine contractions, and delivery. Maternal infection during pregnancy has been shown to disrupt normally regulated gestation, resulting in preterm labor (PTL), preterm premature rupture of membranes (PPROM), or preterm birth (PTB). For example, elevated levels of cytokines IL-1 and IL-6 have been found in the amniotic fluid of patients in preterm labor with amniotic fluid infection.[13]

An inflammatory mediator that plays a key role in periodontal disease is PGE_2. Much of the periodontal changes that occur in periodontal disease can be attributed directly to the presence of PGE_2 or the direct actions of the cytokine. PGE_2 is responsible for increasing gingival redness, edema, collagen destruction, and bone loss. The effects of PGE_2 are enhanced by synergistic interactions with other inflammatory mediators. At the sight of inflammation, PGE_2 also has the ability to stimulate other cytokines such as IL-1b and TNF-∝, where it causes an increased reaction by the cytokines.[14-18] Several studies have looked at the concentration of PGE_2 in periodontal disease and have found that it increases as the severity of the periodontal disease increases.[14,19-23] Gram-negative bacteria such as that found in periodontal disease elicits a PGE_2 inflammatory response which is principally followed by the initial activation of monocytes and macrophages.[14,24-26]

> *Preterm infants are nearly seven times more likely to die before their first birthdays than are term infants.*

PGE_2 is not only present in the periodontal inflammatory process but also mediates birth as well as premature birth. Amniotic fluid levels of PGE_2 rise steadily throughout pregnancy and once a critical threshold is reached, induce labor, cervical dilation, and delivery. Elevated levels of PGE_2 are present in PTB and LBW, even in the absence of a clinical or subclinical infection.[27] It is the relationship between gram-negative bacteria and cytokine levels found in periodontitis that led researchers to explore if periodontal disease affects pregnancy outcomes.

THE ROLE OF THE HOST

The interaction between the microbial flora and the host as a key determinant of disease severity has been the subject of several recent papers.[28,29] While previous theory supported plaque as the primary determining factor of the severity of disease, current research verifies that no single factor such as plaque level can explain the occurrence of disease.[1]

Researchers still do not understand the complete role of the host response that increases susceptibility. However, several biochemical markers appear critical in ease (e.g. PGE_2, IL-1b, TNF-∝, and IL-6).[1] Patients with the most severe periodontal disease also seem to produce the most inflammation when challenged microbially, as determined by measuring the levels of inflammatory mediators.[30] So, the link appears! As stated by Offenbacher, et al., "The risk factors that serve to enhance inflammation in patients and predispose them to periodontal disease may also serve to create a 'common soil' for other multifactorial diseases that have inflammation as a component" (e.g., preterm delivery).[1]

For example, bacterial vaginosis (BV) is a gram-negative, anaerobic vaginal infection that is a significant risk factor for prematurity and is associated with the smallest, most premature deliveries.1,31,32 Prevotella and Bacteroides are the most common gram-negative species found in BV, however, Fusobacterium nucleatum species are occasionally identified. F.nucleatum is also commonly associated with the oral cavity. Toothbrushing may

> *The risk factors that serve to enhance inflammation in patients and predispose them to periodontal disease may also serve to create a "common soil" for other multifactorial diseases that have inflammation as a component (e.g., preterm delivery).*

result in a gram-negative bacteria, particularly in patients with increased levels of plaque and gingival inflammation.33 In pregnancy, there is a suppression of the immune system, and during the second trimester there is an increase in gingivitis that increases the subgingival bacterial population including F.nucleatum. F.nucleatum is one of the few types of bacteria, along with intracellular pathogens, that can penetrate the placenta. It is also often isolated from amniotic fluid in cases of prematurity.[34] Therefore, periodontal disease, a remote gram-negative infection, may theoretically have the potential to affect pregnancy outcome by serving as a potential source of bacteria that may target the fetal-placental unit.[1]

Dental Studies on LBW

In 1994, Collins, et al., investigated the effects of Porphyromonas gingivalis on inflammatory mediator response and pregnancy outcomes in the pregnant hamster.[35,36] Stainless steel tubes (chambers) were placed subcutaneously to simulate a site of infection. The tubes were inoculated with P.gingivalis during pregnancy. The results found that P.gingivalis reduced the fetal weight up to 25%.

Three case-controlled studies compared women who were considered normal term delivery (NTD) and women who had spontaneous preterm births (SPB).[34,37,38] In each of the studies, gingival crevicular fluid samples were taken with paper points from the gingival crevicular fluid. Plaque samples were collected for DNA analysis. Periodontal measurements included probing pocket depth (PPD), clinical attachment level (CAL), and bleeding on probing (BOP). The studies demonstrated that women who had LBW infants from preterm labor or premature rupture of membranes had more severe periodontal disease than the mothers with normal birthweight infants.[1]

In 1996, Offenbacher, et al., studied mothers with normal and abnormal pregnancy outcomes.[38] The results found the latter had significantly higher mean attachment loss than the former. The study suggested that periodontal infections can serve as a reservoir of endotoxin, or lipopolysaccharide (LPS). LPS released from the cell wall elicits PGE_2 and TNF-$\propto$, which can act as a potential systemic source of fetotoxic cytokines.

Another study found that mothers who delivered LBW infants had twice the levels of PGE_2 in the samples gingival crevicular fluid than mothers who delivered normal birth weight infants.[37] A recent study of Thai mothers found that those who had LBW infants were more likely to have more sextants with bleeding and calculus, and to have fewer healthy teeth, when compared to their counterparts.[39]

Currently a five-year prospective study supported by the National Institute of Dental and Craniofacial Research is under way at the University of North Carolina - Chapel Hill School of Dentistry and Duke University Medical Center. The researchers hope to clarify and confirm the relationship between periodontal infection and spontaneous preterm birth. Part of the five-year plan will include intervention studies in which women who are pregnant and have periodontal disease will receive treatment for their periodontitis to see if it will enable the mothers to maintain their pregnancies to full term.

Implications for Dental Hygiene Care

The dental hygienist can play a vital role in educating and treating pregnant patients who have periodontal disease. Information about the potential risks should be communicated to the patient, as well as evaluation and recommendations concerning home care. Patients should be encouraged to keep all scheduled appointments, and consideration should be given to increasing the frequency of treatment during the pregnancy. For patients with active periodontitis, a referral to a periodontist should be considered so that an extensive periodontal evaluation can be performed.

As our knowledge of the systemic effects of periodontal disease become clearer, treatment strategies are likely to change. For example, patients at high risk for preterm delivery may need special antiinflammatory or antiinfective pharmaceuticals to prevent preterm birth.[1] The area of diagnostics is likely to expand to evaluating levels of PGE_2 in gingival crevicular fluid to identify patients at risk for premature delivery.[34] Dental hygienists and dentists will need to be knowledgeable about oral conditions that affect systemic conditions, and take more responsibility for assisting patients to maintain overall health. If periodontal disease does indeed affect spontaneous preterm birth, the demand for oral health services, especially periodontal care - including diagnostic, educational, and therapeutic services - could dramatically increase in the future.

> *Patients at high risk for preterm delivery may need special antiinflammatory or antiinfective pharmaceuticals to prevent preterm birth.*

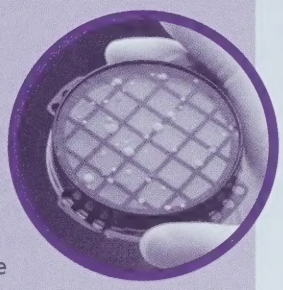
Notes

1. Offenbacher S. Beck JD, Lieff S. et al.: Role of periodontitis in systemic health: Spontaneous preterm birth. Journal of Dental Education 1998; 62: 852-858
2. National Center for Health Statistics: Report of Final Natality Statistics, 1996. Monthly Vital Statistics Report; Vol. 46 No. 11 (supplement). Hyattsville, MD, Public Health Service, 1998, pp. 1-100.

3. Berkowitz GS, Papiernik E: Epidemiology of preterm birth. Epidemiologic Reviews 1993; 15(2): 414-443.
4. Eschenbach DA, Gravett MG, Chen KCS, et al.: Bacterial vaginosis during pregnancy. Scandinavian Journal of Urology and Nephrology 1985; 86 (suppl): 213-222.
5. Romero R, Moshe M, Wu Yk, et al.: Infection in the pathogenesis of preterm labor. Seminars in Perinatology 1988; 12: 262-279.
6. Gibbs RS, Romero R, Hiller SL, et al.: A review of premature birth and subclinical infection. American Journal of Obstetrics and Gynecology 1992; 166: 1515-1528.
7. Eschenbach DA: Bacterial vaginosis and anaerobes in obstetric gynecologic infection. Clinical Infectious Diseases 1993; 16 (suppl 4): S282-287.
8. Matius J, Roos T: The role of urogenital tract infections in the etiology of preterm birth: A review. Archives of Gynecology and Obstetrics 1996; 258: 1-19.
9. Andrews WW, Goldenberg RL, Hauth JC: Preterm labor: Emerging role of genital tract infections. Infectious Agents and Disease 1995; 4: 196-211.
10. Oleen-Burkey MA, Hillier S: Pregnancy complications associated with bacterial vaginosis and their estimated costs. Infectious Diseases in Obstetrics and Gynecology 1995; 3: 149-157.
11. Gomez R, Ghezzi F, Romero R, et al.: Premature labor and intra-amniotic infection. Clinics in Perinatology 1995; 22: 281-342.
12. Nathan C, Sporn M: Cytokines in context. Journal of Cell Biology 1991; 113: 981-986.
13. Romero R, Baumann P, Gomez R, et al.: The relationship between spontaneous rupture of membranes, labor and microbial invasion of the amniotic cavity and amniotic fluid concentration of prostaglandins and thromboxane B2 in term pregnancy. American Journal of Obstetrics and Gynecology 1993; 168: 1654-1664.
14. Offenbacher S, Heasman P, Collins JG: Modulation of host PGE_2 secretion as a determinant of periodontal disease expression. Journal of Periodontology 1993; 64: 432-44.
15. Williams TJ, Peck MJ: Role of prostaglandin-mediated vasodilatation in inflammation. Nature 1977; 270: 530-532.
16. Rifkin BR, Baker RL, Cokeman SJ: Effects of prostaglandin E_2 on macrophages and osteoclasts in cultured foetal long bones. Cell and Tissue Research 1980; 207: 341-346.
17. Klein DC, Raisz LG: Prostaglandins: Stimulation of bone resorption in tissue culture. Endocrinology 1970; 86: 1436-1440.
18. Dietrich JW, Goodson JM, Raisz LG: Stimulation of bone resorption by various prostaglandins in organ culture. Prostaglandins 1975; 10: 231-238.
19. Albers Von HK, Loning T, Lisboa BP: Biochemishe und morphlogische untersuchugen uber die prostaglandine E und F der normalen und entzudlicy veranderten gingiva. Deutsche Zahn Zeitshc 1975; 34: 440-443.
20. Holmes LG, El Attar TMA: Gingival inflammation assessed by histology, 3H-estrone metabolism and PGE_2 levels. Journal of Periodontal Research 1977; 12: 500-509.
21. Ohm K, Albers Von HK, Lisboa BP: Measurement of 8 prostaglandins in human gingival and periodontal disease using high pressure liquid chromatography and radioimmunoassay. Journal of Periodontal Research 1984; 33: 235-249.
22. Offenbacher S, Odle BM, Gray RC, et al.: Crevicular fluid prostaglandin E_2 levels as a measure of the periodontal disease status of adult and juvenile periodontitis patients. Journal of Periodontal Research 1984; 19: 1-13.
23. Offenbacher S, Odle BC, Van Dyke TE: The use of crevicular fluid PGE_2 levels as a predictor of periodontal attachment loss. Journal of Periodontal Research 1986; 21: 101-112.
24. Garrison SW, Holt SC, Nichols FC: Lipopolysaccharide-stimulated PGE_2 release from human monocytes. Journal of Periodontology 1988; 59: 684-687.
25. Garrison SW, Nichols FC: Gamma interferon modulation of prostaglandin E_2 release from monocytes stimulated with lipopolysaccharides from Bacteroides intermedius, Bacteroides gingivalis and Salmonella typhimurium. Oral Microbiology and Immunology 1988; 3: 138-143.
26. Hamada S, Okahashi N, Fijiwara T, et al.: Selection induction of prostaglandin E_2 production in C3H/HeJ mouse macrophages by lipopolysaccharides from bacterial gingivalis. Oral Microbiology and Immunology 1988; 3: 196-198.
27. Romero R, Wu YK, Mazor M, et al.: Amniotic fluid PGE_2 in preterm labor. Prostaglandins Leukotrienes and Essential Fatty Acids 1988; 34: 141-145.
28. Offenbacher S: Periodontal diseases; Pathogenesis. Annals of Periodontology 1996; 1: 821-878.
29. Page RC, Offenbacher S, Schroeder HE, et al.: Periodontology 2000 1997; 14: 216-248.
30. Offenbacher S, Salvi GE; Induction of prostaglandin release from macrophages by bacterial endotoxin. Submitted to Journal of Infectious Diseases 1998.
31. Hillier SL, Martius J. Krohn MJ, et al.: A case-control study of chorioamnionitis in prematurity. New England Journal of Medicine 1988; 319: 972-978.
32. Hillier SL, Nugeny RP, Eschenbach DA, et al.: Association between bacterial vaginosis and preterm delivery of a low birth weight infant: The vaginal infections and prematurity study group. New England Journal of Medicine 1995; 333: 1737-1742.
33. Sconyers JR, Crawford JJ, Moriarty JD: Relationship of bacteremia to toothbrushing in patients with periodontitis. Journal of the American Dental Association 1973; 87: 616-622.
34. Damaré SM, Well SR, Offenbacher S: Eicosanoids in periodontal diseases: Potential for systemic involvement. In Recent Advances of Prostaglandin, Thromboxane and Leukotriene Research. New York, Plenum Publishing, 1997.
35. Collins JG, Windley HW III, Arnold RR, et al.: Effects of a Porphyromonas gingivalis infection on inflammatory mediator response and pregnancy outcome in the hamster. Infection and Immunity 1994; 62: 4356-4361.
36. Collins JG, Smith MA, Arnold RR, et al.: Effects of escherichia coli and porphyromonas gingivalis lipopolysaccharides on pregnancy outcome in the golden hamster. Infection and Immunity 1994; 62: 4652-4655.
37. Offenbacher S, Jared H, O'Reilly P, et al.: Potential pathogenic mechanisms of periodontitis-associated pregnancy complications. Annals of Periodontology 1998; 3: 233-250.
38. Offenbacher S, Katz V, Fertik G, et al.: Periodontal infection as a possible risk factor for preterm low birth weight. Journal of Periodontology 1996; 67: 1103-1113.
39. Dasanayake AP; Poor periodontal health of the pregnant woman as a risk factor for low birth weight. Annals of Peridontology 1998; 3: 206-212.

Heather L. Jared, RDS, MS, is social research associate in the Center for Oral and Systemic Disease; Susan Lieff, MSW, MPH, PhD, is research assistant professor in the Department of Dental Ecology; Rebecca S. Wilder, RDH, MS, is associate professor and coordinator of graduate dental hygiene education in the Department of Dental Ecology; and Steven Offenbacher, DDS, PhD, MMSc, is professor of peridontology in the Center for Oral and Systemic Disease; all at The University of North Carolina-Chapel Hill School of Dentistry.

Using Millipore Samplers in Dental Settings



Millipore HPC Samplers make microbiological analysis of water lines simple, fast and cost-effective.

Dental unit waterlines (DUWLs) have been found to have high microbial counts even when source tap water is chlorinated. Narrow bone tubes in the air/water syringe and handpiece lines including the ultrasonic scaler water lines are ideal places for the development of biofilms. There are reports as many as 100,000 CFU/ml in newly installed dental lines after 5 day operation and an excess of 1,000,000 CFU/ml in older lines.

While there is little evidence that these microbial levels harm the average healthy person, they may put a person who is immunocompromised at risk. Clinic staff who are exposed to airborne particles over a long period of time may be at even greater risk.

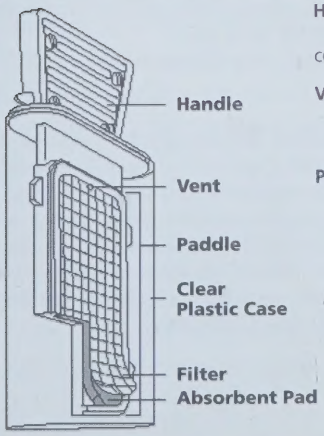
Given the risks to patients and staff, there is a need for an accurate, simple, in-office test to monitor the bacteria level in dental unit water.

The Millipore HPC sampler, which has been used to analyze water samples, and quickly, in the pharmaceutical, food and beverage industries for over 15 years, can also be used in the dental office.

Traditional microbiological tests are not suitable for the dental office because they require media preparation as well as equipment not typically used in dentistry. The Millipore HPC sampler is a self-contained device that is individually packaged, sterilized, ready to use in any dental office.

Please visit Millipore's website:
www.millipore.com/appmicro/site.nsf/home

Telephone:
1-800-645-5476, ext. 8198 (technical support)
1-800-645-5476, ext. 8040 (customer service)



Handle — allows operator to hold paddle without contaminating sterile surfaces

Vent — allows passage of air as the membrane filter and pad absorb water

Plastic Case — for sampling, incubating, and analysis

Filter — captures microorganisms

Absorbant Pad — supports the growth of microorganisms with nutrient medium

News

Canadian Dental Association (CDA) Guidelines on Dental Unit Waterline Maintenance

Dentists are encouraged to take steps to reduce any potential risk of dental unit waterline microorganisms causing infection through the following waterline maintenance procedures:

Avoid heating water for the dental unit.

At the beginning of each clinic day, purge all lines by removing handpieces, air/water syringe tips and ultrasonic tips and flushing thoroughly with water. The decrease in bacterial counts associated with such purging has been confirmed in two Canadian studies.[1,2] According to Barbeau et al.[1], 1996, and Whitehouse et al.[2], 1991, approximately a 5-8 minute purge is required to reduce bacterial counts to potable water standards (<500 cfu/ml).

Run high speed handpieces for 20-30 seconds after each patient, to purge all air and water.

Use sterile water or sterile saline when flushing open vascular sites and/or cutting bone during invasive surgical procedures.

Follow manufacturer's instructions for daily and weekly maintenance if using bottled water or other special delivery system.

---

[1] Barbeau, J., Tanguay, R., Faucher, E. et al. Multiparametric analysis of waterline contamination in Dental Units. *Appl Environ Microbiol.* 62:3954-3959, 1996

[2] Whitehouse R.L.S., Peters, E., Lizotte, J. et al. Influence of biofilms on microbial contamination in dental unit water. *J Dent.* 19:290-295, 1991

Approved by Resolution 97.72
CDA Board of Governors
September, 1997

Call for Probes

The CDHA has been updating the Central Office Library, and it has come to our attention that our archives are missing some issues of the journal Probe. It would be greatly appreciated if dental hygienists would be willing to return to the CDHA, attention Francine Fortin, any of the following back issues:

Season/Month	Year	Volume	Number
Fall	1972		
Spring	1984	18	1
Fall	1984	18	3
Summer	1985	19	2
Summer	1986	20	2
September	1987	21	3
December	1987	21	4
Spring	1991	25	1

Thank you.

Classifieds

YOUTH EXCHANGE PROGRAM 18-30, SWITZERLAND We are looking for a full-time dental hygienist in a preventive oriented dental practice. If you are single, right-handed under the age of thirty, enjoy traveling and are willing to make a one year commitment, please contact us. Our staff is English speaking. We offer excellent working conditions: USA Infection Control Standards. Furnished apartment available. Benefits include: 6 weeks paid vacation, 13 monthly salaries yearly. Professional liability, sick pay and accident insurance. Canadian or USA license accepted. Knowledge of or willingness to learn German expected. We value friendliness, caring for clean and careful treatment. Send resume to: PO Box 63, 4125 RIEHEN 1. BS, SWITZERLAND or fax: 011-41-61-641-61-68

DENTAL-AID PERSONNEL BRITISH COLUMBIA Dental-Aid Personnel is a professional staffing service providing permanent and temporary relief to dental offices since 1987. We have an extensive growing client base reaching from Greater Vancouver through the Fraser Valley and are continually seeking dedicated and professional dental hygienists. For more information, phone (604) 524-3904, fax (604) 925-9223, e-mail: jchung@planeteer.com

ON BEAUTIFUL VANCOUVER ISLAND! Nanaimo, BC Summer relief & fall maternity leave (3-4 days/wk). Busy, modern periodontal orientated practice requires a Registered Dental Hygienist to relieve staff for summer holidays. This position would lead into a one year maternity leave commencing in September. Please fax resume to (250) 754-4326, or mail to: Dr. John Olesen, 51 Tenth Street, Nanaimo BC V9R 5K1, Office phone #: (250) 754-4440

EMPLOYMENT OPPORTUNITY Full time dental hygienist is required immediately for dental clinic in Yellowknife, NWT. We are seeking a reliable, friendly, outgoing individual to work as part of a team. Salary is based on commission or hourly basis. Please mail or fax resume to the following: Dr. H. Biati & Associates, PO Box 1178, Yellowknife, NWT X1A 2N8, Fax: 867-873-9650

DENTAL HYGIENIST Are you the person we are looking for? - Highly motivated, warm, caring individual, positive team player, and loves having fun in the outdoors. Competitive wages and benefits based on qualifications and experience. Position available immediately. Apply to: Attention: Jessica, 200-4619 Park Avenue, Terrace, BC V8G 1V5, Phone: (250) 635-7611, Fax: (250) 635-7630

NORTHERN BRITISH COLUMBIA Dental Hygiene positions available in the Northern BC towns of Fort Nelson, Fort St. John, Dawson Creek, and Chetwynd. Very competitive wages and excellent experience to be gained. For more information, please call Dr. Mark Spitz at (250) 782-8188.

WE ARE EXPANDING our dental hygiene department and require another enthusiastic dental hygienist. Busy, preventive, cosmetic and team oriented practice located in modern office in Maple Ridge (outskirts of Vancouver, BC). Full time or part time position with flexible days and hours. Extended benefits package available. Please fax resume to (604) 466-1548.

POSITIONS AVAILABLE FOR: A Registered Dental Hygienist & An Expanded Duty Dental Hygienist Dr. Harris & Associates is a progressive family dental practice, that has successfully integrated an expanded duty dental hygienist for 10 years. Our team members pride themselves in offering quality care and service to their patients in a positive team environment. Do you possess a positive attitude, excellent interpersonal skills and a commitment to ongoing professional development? If so, we encourage you to forward your resume, in confidence to: Attention: Diane, Office Manager, Dr. Jim Harris & Associates, 499 Dundas Street West, Trenton ON K8V 6C4, Fax: (613) 392-3783

DENTAL HYGIENE POSITION available in suburb of Vancouver. New 2-bedroom condominium available for your occupancy. Progressive office. Two dentists. Dedicated hygiene operatory. Excellent salary. Established position. Full-time. Phone (604) 465-3432. Ask for Jan.

ELKFORD, BC – Position available immediately. Busy family practice in picturesque mining community in the East Kootenays. Enjoy fabulous outdoor recreation, including world class skiing, and inexpensive rural lifestyle as well as easy access to major centres. Elkford is in south eastern BC, 40 minutes from Fernie and 3 hours from Calgary, close to the BC, Alberta and US borders. Contact Dr. Alastair Nicoll or Ms. Marilyn Gray at (250) 865-4344 (daytime), (250) 865-7211 (evenings), or fax (250) 865-7838.

WE ARE SEEKING a motivated, conscientious, team-oriented dental hygienist for a busy rural practice in Nova Scotia. Full-time term position, starting summer/fall of 2000. Experience is an asset. Please fax resumes to (902) 875-4005 or mail to Beatti Mahaney, Box 1000, Shelburne NS, B0T 1W0

BRITISH COLUMBIA, CANADA Friendly Central Vancouver dental office has an excellent opportunity for a full time dental hygienist to join a progressive dental team. Successful candidate must be professional with an excellent understanding of modern dentistry. Communication skills and a team attitude are essential. Please fax resumes to (604) 540-9495 or call 1-888-228-0333

NORTH SHORE DENTAL TEMPS INC., British Columbia "North Shore Dental Temps Inc." services the entire Greater Vancouver area and Vancouver Island. We are looking for qualified dental hygienists for a variety of part time and full time positions. For further details, phone (604) 990-8777, fax (604) 990-8762, or e-mail nsdentaltemps@telus.net.

DUNCAN, BC Wonderful patients, staff and office will welcome a Registered Dental Hygienist who would like to work approximately three days a week in Duncan, BC on beautiful Vancouver Island. Please fax resume and handwritten cover letter to (250) 748-9868 or call (250) 748-2086.

ess of designing treatment on the basis of client data, a process reportedly made easier with the acquisition of clinical experience and exposure to a wide variety of individual variation among clients. In Canada, the description, testing, and analysis of dental hygiene diagnosis, inference, and treatment is restricted by the limited number of dental hygienists actively involved in research regarding dental hygiene interventions. This limitation is, in turn, a function of the few dental hygienists educated at the graduate level and working in practice settings or institutions which foster research.

Professional vulnerablility is a function of both the subjective and objective nature of professional work. The three components of professional practice which connect the profession with its tasks — diagnosis, inference, and treatment — are the bases of inter-professional competition.[4] It is precisely these acts of dental hygiene that provincial associations are required to define for legislators considering self-regulation, scope of practice and supervision requirements for dental hygiene.[12] Ultimately, however, even though a satisfactory definition of these components is necessary, it may not be sufficient. The claims to jurisdiction or work take place in the public arena, and these claims must be socially legitimated in opposition to the more dominant profession of dentistry. Dentistry maintains control of dental hygiene by claiming that dental hygiene work is not distinct from dentistry, and that diagnosis, inference, and treatment are legitimately performed only by the dentist.

PROFESSIONAL DOMINANCE OF MEDICINE AND DENTISTRY

The division of labour in the health care sector is an hierarchical articulation of knowledge relationships dominated by medicine which has the ultimate control of the knowledge base for health care[13]. Medicine dominates its own work, that of other health occupations, and the wider health sphere through law, relationships with other groups and institutions, and custom.[14-18] At least four forms of health care division of labour are recognized.[14] The first division of labour is between dominant professional groups such as medicine and dentistry. The second is the internal specialization of the dominant professions into specialities such as neurology and surgery in medicine, and orthodontics and periodontics in dentistry. The third form is the development of related health occupations such as dental hygienists, nurses, physiotherapists, and occupational therapists, and the last is represented by paramedical and paradental groups such as nursing assistants and dental assistants. In this hierarchy, low status occupations are near the bottom, marginal occupations in the middle, and medicine at the apex.

Dentistry is able to delegate roles and responsibilities and to confine the roles of a range of other oral health occupations — dental hygienists, dental assistants, dental technicians, dental therapists (formerly known as dental nurses) and denturists. Dentistry operates under legal, ethical, and scientific standards similar to medicine and has resisted any encroachment on its jurisdiction through organized social, political, and legal efforts. Despite these efforts, denturists became completely independent of dentists in the 1960s and continue to pose a threat to the jurisdiction of dentists. The most striking example of the influence of dentistry is their complete displacement of the Saskatchewan school-based dental plan in which preventive and treatment services were provided to children by dental therapists in the period from 1974 to 1987. The quality and success of that program were never in dispute but the dentists who initially accepted the plan later lobbied the government to return the services to the private sector.[19]

The settlement of jurisdictional disputes can be full and final, or they can be more limited settlements imposing subordination, a division of labour, maintenance of intellectual or advisory jurisdiction, or client differentiation.[4] Dentistry, to this date, has maintained a nearly full and final jurisdiction in the settlement with dental hygiene while dental hygiene has an unstable and limited subordination settlement in the form of self-regulation in five provinces, and virtually complete subordination in those provinces which are not self-regulating. The definition of boundaries for dental hygiene's scope of practice actually maintains dentistry's dominance by delegating a diminished role to dental hygiene and requiring that role to be carried out only under the supervision of a dentist. Even in those provinces which are self-regulating, autonomy is essentially limited to registration, licensure, and discipline according to a limited scope of practice with ongoing requirements for supervision or direction by dentistry. In Ontario, for example, dental hygienists may provide traditional dental hygiene care only on the order of a dentist.[20] The interpretation of 'the order' is still, at the time of writing, contested by both dentists and dental hygienists, and is unresolved,[21] despite a recommendation by the Ontario Health Professions Regulatory Council (HPRAC) to remove the requirement entirely.[22] In British Columbia patients of dental hygienists must have been examined by a dentist within the previous 365 days.[23] The responsibility of the dental hygiene profession to manage the certification, registration, licensure, and discipline procedures has placed new demands on organizational resources. From a jurisdictional perspective, the hallmark of self-regulation — complete autonomy — seems remote for dental hygiene.

Conceptually, however, a functional settlement with dentistry could reasonably define dental hygiene's scope of practice

without requiring supervision by a dentist. Although dental hygiene is subordinated to dentistry as nursing is to medicine, the workplace reality is that dental hygienists provide skill and expertise in a role which is growing in its impact on oral health.[24] The preventive and health promotion assessments and therapy of the dental hygienist could be considered uniquely dental hygiene. Alternatively, an intermediate level oral health care practitioner as proposed by Nielsen-Thompson and Brine would deliver primary oral health care within primary health care centers.[25] Any settlement will continue to be unstable if dentistry claims intellectual and advisory jurisdiction over dental hygiene by virtue of dentistry's foundation knowledge and research. The economic and social inequities present will also continue to challenge dental hygiene's claim to jurisdiction and professional status.

GENDER ISSUES IN DENTAL HYGIENE

Gender inequality operates as a highly effective systematic repression of occupational efforts to gain recognition as a profession. Gender distinctions in the workplace contribute to a power differential and to the domination of predominantly female occupations by those largely male. The position of women in the professions has been analyzed from the perspectives of class and status.[26, 27] In the field of health care the majority of occupations, particularly at the lower end of the hierarchy, continue to be female-dominated[13, 14], yet the female experience is generally disregarded in the description, analysis, and interpretation of the health labour market.[28] Although the impact of genderization on the development of dental hygiene in Canada was noted as early as 1979[29], it is is only partially described.

The role of gender in the practice and professionalization of dental hygiene is described as having "produced and perpetuated a paternalistic relationship between dentistry and dental hygiene".[5] In her discussion of the sexual division of labour in the household and the workplace, McIntyre[30] describes the system of biological, ideological, and economic rationales which perpetuate genderization. The biological rationale is the basing of sex role stereotypes on the biological categories of male and female. The fact that women bear and nurture children is used to define nurturing or caring work as maternal. The biological categories provide the cultural stereotypes or ideational rationale which alleges that women are better suited to some work than others. Dr. Alfred Fones first described the role of the dental hygienist in 1913 as being ideally suited to women because women possess certain characteristics such as honesty and reliability. He also stated that women can work well with children, and they would be content to limit their skills to one form of treatment, the oral prophylaxis.[31] In the delivery of oral health services, the subordination of dental hygiene to dentistry is firmly based in the gendered work of dental hygiene.

The patriarchal nature of relationships within health occupations is, perhaps, the most resistant to change, particularly when *caring* is seen as part of the biological, natural, or ordained character of women. Dental hygiene is similar to nursing and occupational therapy in reporting gender concerns. Nursing posits "that the nurses right to *care* should be given equal consideration with the physician's right to *cure*".[32] A 1978 review of Canadian occupational therapy referred to it as 'the diffident profession' and proposed a host of strategies to change the negative and diminishing effects of a profession considered one of the female 'ghettos'.[33] Physiotherapy, by contrast, does not appear to display the same degree of concern for gender issues although it clearly evolved as a feminine occupation. The proportion of males in this profession may be greater than in nursing, occupational therapy and dental hygiene. One might also speculate that there is more of the medical *cure* and less of the nursing *care* in physiotherapy, and that this framework is more attractive to males than the nurturing and caring emphasized in other health occupations.

The intensity of ideological perspectives is illustrated in professional governance statutes and policies. Regulatory statutes sanctioning the dentist's control of dental hygienists have historically used terms such as 'define, establish, develop, regulate and control' the dental hygienist. A comparison of 1979 and 1988 sections of the Dentists Act of British Columbia illustrates a change of terminology to one more deferential toward the knowledge and competence of auxiliary groups.[28] Perceived threats to the dominant profession frequently result in irrational behaviour which may become enshrined in legislation. Dentists have generally delegated tasks to the less professional, less well trained, more controlled, and almost exclusively female dental assistants when the dental hygienists' formal education and preparation make them better candidates for more responsibility.[28] Nevertheless, dental hygienists have been recognized by health policy experts as being excellent candidates for independent practitioner roles.[28, 34]

The economic rationale described by McIntyre[30] encompasses the 'dual market' theory of primary and secondary work sectors. The primary sector demonstrates features such as high wages, good working conditions, job security, and upward mobility. Feminist hypotheses suggest that the secondary

5. Health and Welfare Canada: The practice of dental hygiene in Canada Description, guidelines and recommendations Report of the working group on the practice of dental hygiene in Canada Part one. Ottawa, Canada: Minister of Supply and Services Canada, 1988, p. 149.

32. Reverby, S.: A caring dilemma: Womanhood and nursing in historical perspective. In: Conrad, P., Kern, R. eds. Sociology of health & illness Critical perspectives. 3rd ed. New York: St. Martin's Press, pp. 184-195, 1990, p. 192.

sector is largely feminized, demonstrates lower service costs based on lower educational levels, and creates a need for goods and services which enhances the primary sector.[30, 35] Dental hygiene, relative to dentistry, is consistent with the description of the secondary sector in its lower educational level. Rather than creating a need for dental services, however, dental hygiene provides services which can be provided by dentists but have been almost entirely delegated to dental hygienists.

In the field of health care, dental hygiene is unique in its economic relationship with the dominant profession. Over 85 percent of all dental hygienists are non-unionized employees of the dominant profession of dentistry in the private sector.[36] While numerous remuneration and contractual arrangements have arisen, the dental hygienist generates substantial income for the dentist in the performance of dental hygiene work. The current monopoly and control of these services by dentists is threatened by dental hygiene's jurisdictional claim. Indeed, the "hygienist is a competitive threat to the practicing dentist, which the profession cannot ignore".[14] Dental hygienists may seek complete autonomy similar to the denturists who succeeded in the early 1960s. Unlike the predominantly male denturists, however, dental hygiene is characteristically feminized and vulnerable to predominantly male policymakers. The health care system has been designed, and professional governance defined, through policies that have a strong gender bias.[28]

SUMMARY

The status of dental hygiene as a profession in Canada is comprehensible only when analyzed from several theoretical perspectives. These diverse interpretations of dental hygiene as a profession are compatible with the disparate scholarship on professions. Freidson submits that sociologists have seen professions as honoured servants of public need, economists have noted the closed, monopolistic character of the professions, political scientists view professions as privileged self governments, and policy makers see professional experts as being self serving and narrow in their vision of what is good for the public.[36] The aggregate of these divergent viewpoints brings important features to light and constructs new meaning in the case of dental hygiene.

Canadian dental hygiene demonstrates a high degree of the traits attributed to professions. It has been assisted in its movement towards professional status by significant social trends emphasizing equity and prevention in healthcare and the public interest in regulation. The prevailing impediments to the achievement of professional status are the underdeveloped articulation of dental hygiene's professional work, the professional dominance of dentistry, and the feminized character of dental hygiene. The most critical of these challenges may be the feminization of dental hygiene and its manifestations of social and economic subordination. The paucity of women in policymaking roles reinforces scepticism concerning the potential for a gender-equal or gender-neutral future in healthcare. As an advancing profession with fledgling strengths dental hygiene is particularly vulnerable to the influence of dominant male organizations and policymakers.

Equally or even more critical is the challenge of the underdeveloped knowledge base of dental hygiene. Activity and success in developing the knowledge foundation which supports the practice of dental hygiene has enormous potential for securing both government and public recognition. Knowledge development will define even more precisely the professional work of the dental hygienist and distinguish it from that of the dentist. Education is known to diminish power differentials among individuals and groups, and this effect is even more remarkable at the level of knowledge development. The impediments which have effectively hindered the development of baccalaureate and graduate dental hygiene programs in Canada are clear indicators of both the power of knowledge development and dissemination, and the strength of the resistance.

CONCLUSION

The way in which power is acquired and used to interact with clients, other occupational groups and the government is key to understanding the professions today. A primary task of dental hygiene in pursuit of its professional status is the use of the more contemporary social theories of professions to describe, explain, direct, and, perhaps, even predict dental hygiene as a profession. Those theories which address professional dominance, professional conflict, gender, class, and economics are the critical linkages with the reality of dental hygiene. In Canada, this understanding is fundamental to the achievement by dental hygiene of status and recognition as a profession.

ACKNOWLEDGMENTS

These papers were adapted from earlier works prepared with guidance from Professor K. Fierlbeck, Department of Political Science, Dalhousie University, Professor D. H. Poel, School of Public Administration, Dalhousie University, and Professor T. Regan, Dean of Arts, Acadia University.

Re: Part One of this two-part series. There was an omission on page. 190 in Table 1. Attributes of Dental Hygiene in Canada Compared with Pavalko's Model.

Under #2. Relevance to social values, the first bullet under the column Evidence of the Dimension should read:
** conceptual congruence with quality of life philosophy*

14. Blishen, B.: Doctors in Canada: The changing world of medical practice. Toronto: University of Toronto Press, 1991, p. 102.

REFERENCES

1. Pavalko, R. ed: Sociology of occupations and professions. Itasca, Illinois: F. E. Peacock Publishers, Inc., pp. 17-50, 1988
2. Schon, D.: The reflective practitioner How professionals think in action. New York: Basic Books, Inc., pp. 21-49, 1983
3. Schein, E.: Professional education: Some new directions. New York:McGraw-Hill, pp. 43-45, 1973
4. Abbott, A.D.: The system of professions: An essay on the division of expert labour. Chicago: The University of Chicago Press, 1988
5. Health and Welfare Canada: The practice of dental hygiene in Canada Description, guidelines and recommendations Report of the working group on the practice of dental hygiene in Canada Part one. Ottawa, Canada: Minister of Supply and Services Canada, 1988
6. Darby, M., Walsh, M. eds: Dental hygiene theory and practice. Philadelphia: W. B. Saunders Company, 1994
7. Prowse, N., Mitchell, T. & Butt, G.: Dental hygiene practice model: Application to dental hygiene education. *Probe* 23: pp. 35-37, 1989
8. Wilkins, E.: Clinical practice of the dental hygienist. 7th ed. Philadelphia: Williams & Wilkins, 1994
9. Woodall, I.: Comprehensive dental hygiene care. 4th ed. St. Louis: Mosby-Year Book, Inc., 1993
10. Dunning, J.: Dental care for everyone: Problems and proposals. Cambridge, Massachusetts: Harvard University Press, 1976
11. Schoen, M.: A quality assessment system: The search for validity. *J Dent Educ* 53: pp. 658, 1989
12. College of Dental Hygienists of Ontario: Consolidated submission to health professions regulatory advisory council on dental hygiene. Toronto: College of Dental Hygienists of Ontario, 1995
13. Willis, E.: Medical dominance. North Sydney, Australia: George Allen & Unwin Australia Pty Ltd, pp. 1-35, 1983
14. Blishen, B.: Doctors in Canada: The changing world of medical practice. Toronto: University of Toronto Press, 1991
15. Bolaria, B.: Sociology, medicine, health, and illness: An overview. In: Bolaria, B. ed. Health, illness, and health care in Canada. Toronto: Harcourt Brace & Company, Canada, pp. 1-18, 1994
16. Coburn, D., Torrance, G. & Kaufert, J.: Medical dominance in Canada in historical perspective: The rise and fall of medicine? *Int J Health Serv* 13: pp. 407-432, 1983
17. Coburn, D.: Canadian medicine: Dominance or proletarianization? *Milbank Q* 66: pp. 92-116,1990
18. Tuohy, C.: Policy and politics in Canada Institutionalized ambivalence. Philadelphia: Temple University Press, pp. 105-158, 1992
19. Croucher, R.: Professions, ideology, and change: The response of dentists to a provincial dental plan. In: Bolaria, B., Dickinson, H. eds. Sociology of health care in Canada. Toronto: Harcourt Brace Jovanovich Canada Inc., pp. 346-359, 1988
20. Government of Ontario: Dental Hygiene Act. Toronto: Queen's Printer, 1991
21. Richardson, F.: *(telephone communication, May 1999)*
22. Health Professions Regulatory Council: Report and recommendations. Toronto: Government of Ontario, 1996
23. Province of British Columbia: Order in Council No. 1564 Dental hygienists regulation. Victoria: Province of British Columbia, 1994
24. Lewis, D.: Epidemiologic trends and dental care issues relevant to future dental hygiene. *Probe* 24: pp. 132-137, 1989
25. Nielsen-Thompson, N. & Brine, P.: Expanding the physician-substitute concept to oral health care practitioners. *J Public Health Policy* 18: pp. 80-97, 1997
26. Crompton, R.: Gender, status and professionalism. *Sociol* 21: pp. 413-428, 1987
27. Witz, A.: Professions and patriarchy. London: Routledge Publishers, 1992
28. Kazanjian, A.: Health-manpower planning or gender relations? The obvious and the oblique. In: Riska, E., Wegar, K. eds. Gender, work and medicine Women and the medical division of labour. London: SAGE Publications Ltd, pp. 147-171, 1993
29. Jones, L.: Dental hygiene as a female dominated semi-profession. *Can Dent Hyg* Fall,13: pp. 62-66, 1979
30. McIntyre, E.: Dental hygiene: The consequences of a feminized profession. *Probe* 23: pp. 186-189, 1989
31. Motley, W.E.: History of the American Dental Hygienists Association. Chicago: American Dental Hygienists Association, 1986
32. Reverby, S.: A caring dilemma: Womanhood and nursing in historical perspective. In: Conrad, P., Kern, R. eds. Sociology of health & illness Critical perspectives. 3rd ed. New York: St. Martin's Press, pp. 184-195, 1990
33. Maxwell, J. & Maxwell, M.: Occupational therapy: The diffident profession. Kingston, Ontario:Queen's University, 1978
34. Warburton, R. & Carroll, W.: Class and gender in nursing. In: Bolaria, B., Dickinson, H. eds. Sociology of health care in Canada. Toronto:Harcout Brace Jovanovich Canada Inc., pp.364-374, 1988
35. Johnson, P.: Canadian dental hygienist study Part III: Dental hygiene workplace and hours of work. *Probe* 23: pp. 26-29, 1989
36. Freidson, E.: The theory of the professions: State of the art. In: Dingwall, R. Lewis, P. eds. The sociology of the professions. New York:St. Martin's Press, pp. 19-37, 1983

IADR ABSTRACTS FROM WASHINGTON, DC

THE FOLLOWING ABSTRACTS HAVE BEEN SELECTED FOR SIMULTANEOUS PUBLICATION WITH PERMISSION FROM THE INTERNATIONAL ASSOCIATION OF DENTAL RESEARCH (IADR).

THIS RESEARCH WAS INTRODUCED AT THE 78TH GENERAL SESSION OF THE IADR, HELD IN WASHINGTON DC ON APRIL 5-8, 2000.

MEASURING THE OUTCOMES OF DENTAL CARE FOR OLDER ADULTS.

D. LOCKER (Faculty of Dentistry, University of Toronto, Toronto, Canada)

A number of methods have been used to measure change in self-perceived oral health. These include global transition judgements and change scores derived from repeat administrations of OHRQOL measures. This paper examines the use of these two approaches in terms of their sensitivity to the outcomes of dental care provision to older adults. Data were collected as part of the Ontario Study of the Oral Health of Older Adults, a survey of community-dwelling persons aged 50 years and over. 611 subjects were interviewed and clinically examined at baseline and three-year follow-up. The OHRQOL of these subjects was measured using a battery of subjective oral health status indicators (SOHSI). 495 subjects reported at least one dental visit during the three-year observation period. The dental records of 408 were obtained and provided data on the number of visits and the volume and value of dental services received. Using the global transition judgements, 10,4% of subjects reported improved oral health, 70.8% that their oral health had remained the same and 18.8% that it had deteriorated over three years. The mean number of dental services received by these three groups were: 15.7, 9.8, 10.7; $p < 0.0001$. The change scores derived from the SOHSI revealed a similar amount of change. However, correlations between these scores and the number of services received were below 0.10 and none were significant. **This indicates that the SOSHI is not a good evaluative measure for assessing the outcomes of dental care for older adults.** *Supported by Ontario Ministry of Health Grant #04170.*

BRITISH COLUMBIA AND NOVA SCOTIA DENTAL HYGIENISTS' KNOWLEDGE OF ORAL CANCER.

J. CLOVIS, A.M. HOROWITZ, D.H. POEL (Dalhousie University, NS Can., NIDR/NIH, Bethesda, MD USA, Dalhousie University, NS Can.)

Relative to Canadian averages, incidence and mortality rates of oral cancer for British Columbia (BC) and Nova Scotia (NS) represent lower and higher rates respectively. As key providers in the prevention and early detection of oral cancer, dental hygienists (DH) in BC and NS were surveyed as part of a larger study on knowledge, opinions, and practices of dental professionals. In February 1998 a pre-tested, 41-item survey was mailed to 894 DH (NS $n = 378$) (BC $n = 516$). A follow-up postcard and one additional complete mailing was sent to non-respondents. SPSS software was used for the analysis of 606 usable responses (RR = 70%). Almost all correctly identified tobacco use (99.7%), alcohol use (94%) and prior oral cancer lesion (99%) as high risk factors, but human papilloma virus and low consumption of fruits and vegetables were identified correctly by only 42% and 34% respectively. Items identified incorrectly as risk factors included family history of cancer (94%), poor fitting dentures (78%) and poor oral hygiene (46%). Although 79% recognized older age as a high risk factor, only 27% identified that the majority of oral cancers are diagnosed in the age group 60+ years. 91% correctly identified the examination procedures of tongue for detection of oral cancer and 86% correctly identified early lesions as asymptomatic but only 58% correctly identified both the tongue and the floor of the mouth as the most common sites and only 28% identified both erthyroplakia and leucoplakia as the conditions most likely associated with oral cancer. On 4 items between group differences were significant at $p < .01$. Three knowledge items representing high, medium and low correct response rates were selected to test impact of three demographic variables. Recentness of continuing education was related to high and low correct response at $p < .001$. **Results indicate a need for interventions to increase knowledge of risk factors, signs, and symptoms of oral cancer among dental hygienists in BC and NS.**

CANDIDA ALBICANS SWITCH PHENOTYPES FROM HIV+ PATIENT DIFFER IN FLUCONAZOLE SUSCEPTIBILITY.

T. SIFRI and K. VARGAS (Univ. of Iowa, Iowa City, IA).

Candida albicans and related species have been shown to switch at high frequency between a number of general phenotypes distinguishable by colony morphology. Studies have suggested that phenotypic switching is involved in pathogenesis and has been shown to affect characteristics such as: antigenicity, sensitivity to PMN and virulence in the mouse. Since antifungal drug resistance has been an increasing problem in immunocompromised individuals, it was the purpose of this study to evaluate whether different switch phenotypes of the same strain of Candida albicans vary in their antifungal susceptibility to fluconazole. A C. albicans strain isolated from an HIV+ individual was used for this study. After establishing the minimum inhibitory concentrations (MIC) to fluconazole for five switch phenotypes from this strain (smooth white, ring, star, wrinkled and heavily myceliated), growth kinetic assays were conducted. Switch phenotypes were adjusted to $1x10^5$ cells in YPD broth and mixed with either no antifungal (control) or 2X, 4X or 6X the MIC and incubated aerobically at 35°C. At 0, 1, 2, 3, 4, 6, 8, 12 and 24 hours, aliquots were removed from each tube and plated onto modified Lee's agar plates, incubated at 25°C for 7 days. Colonies were then counted for phenotype stability and killing by the antifungal. Statistical analysis was done using one-way ANOVA and Tukey post-hoc tests. Our results showed that at even 6X the MIC, the star, ring and heavily myceliated phenotypes grew as well as the control. At all MIC concentrations, the smooth white phenotype was significantly ($p < 0.05$) inhibited by fluconazole and growth of the wrinkled phenotype was only affected at 4X and 6X the MIC ($p < 0.05$). Differences in growth rates among the phenotypes were also found to be statistically significant at 4X and 6X MIC ($p < 0.05$). **These results suggest that phenotypic switching may enable C. albicans to escape threatening environments, and enable it to become resistant to antifungal treatment.** *This research project was supported by NIH grant DEO0364 and a Dows Student Research Award, The University of Iowa College of Dentistry.*

THE ULTRASTRUCTURE AND BACTERIAL INTERFACE OF MATURE SUPRAGINGIVAL HUMAN CALCULUS.

PN GALGUT, N J MORDAN, G FAZI and B TAN (Eastman Dental Institute for Oral Healthcare, Sciences, University of London, UK).

Research on dental calculus structure has concentrated on the mineral component with little attention paid to the organic/bacterial phase. There are conflicting reports that the calcification process can be both initiated by bacteria and occur in non-plaque formers. The aim of this study was to examine the ultrastructure of mature supragingival dental calculus and its interface with the oral bacteria using light (LM) and electron microscopic (EM) techniques. Mature supragingival calculus was harvested from the lingual and interdental regions of the lower anterior teeth of healthy human subjects presenting for periodontal therapy. Calculus was fixed in 3% glutaraldehyde, dehydrated, embedded and, 0.5mm sections were cut for LM and 90-100mm sections for EM. Results demonstrated areas of mineralisation containing unmineralised lacunae throughout the calculus. Investigation of these lacunae showed they contained microbes, some of which were degenerating and mineralising, while others appeared viable and unmineralised. Some bacteria contained electron-dense areas whilst others had electron-dense areas occurring in their outer surfaces only. Electron-dense particles were also observed in the intercellular matrix. On the calculus surface, various bacterial formations were observed associated with different mineralisation patterns, in particular, dense palisade bacteria appeared to form a barrier to the advancing mineralising front. Foci of mineralisation were also observed unconnected with the calculus surface. **We conclude from this study that calculus is not simply mineralised plaque as currently accepted, but is a highly complex structure made up of a variety of calcified and non-calcified regions some of which contain possible viable bacteria.**

COMMUNITY EFFECTIVENESS OF FISSURE SEALANTS AND EXPOSURE TO FLUORIDATED WATER.

J.M. ARMFIELD and A.J. SPENCER (AIHW Dental Statistics & Research Unit, The University of Adelaide, South Australia).

The effectiveness of fissure sealants in preventing caries has been well established in randomised clinical trials. However, there is less consistent evidence of fissure sealant effectiveness from community dental programs. In addition, there are unequivocal findings on the relationship between the effectiveness of fissure sealants and exposure to fluoridated water. The current cohort study examined 4-15 year-old children attending the School Dental Service (SDS) of two Australian states, Queensland and South Australia, across a period of between 6 months and 3.5 years (mean = 2 years). Oral health data were obtained as part of regular examinations by the SDS and questionnaire data on residential and water consumption history was provided by childrens' parents or guardians. A sub-group of 791 people (mean age = 10.5 years) was selected with one contralateral pair of permanent first molars at baseline where the occlusal surface of one molar had been fissure sealed while the paired surface was diagnosed as sound. The caries incidence of the fissure sealed occlusal surfaces was 5.6% compared to 11.1% for sound surfaces ($p < .001$), demonstrating a 50% reduction in caries incidence for sealed vs non-sealed surfaces. Children were divided into 3 categories of percent lifetime exposure to optimally fluoridated water, 0%, 1-99% and 100%. Per cent reduction in caries increment attributable to fissure sealing increased across fluoridated water exposure categories — a 36.2% reduction was found for children with 0% exposure ($p > .05$), a 44.8% reduction for children with intermediate exposure ($p < .01$), and an 82.4% reduction for children with 100% lifetime exposure to fluoridated water ($p < .001$). **It is concluded that the effectiveness of fissure sealants in community-based programs may be further improved when coupled with increased lifetime exposure to optimally fluoridated water.** *This study was supported by the Australian NHMRC.*

INTROAORAL FOOD MANAGEMENT DURING MASTICATION OF FOODS OF DIFFERENT TEXTURES.

L. MIOCHE[1,2], K.M. HIIEMAE[2], and J.B. PALMER[3]. [1] INRA, Clermont-Ferrand, France;[2] Institute for Sensory Research, Syracuse University, Syracuse NY 13244,[3] Physical Medicine and Rehabilitation, John Hopkins University, Baltimore, MD 31210

Food processing during the closing and occlusal phases of chewing cycles has been extensively investigated. Intraoral food management during opening and early closing is sparsely documented, although it is the major sensorimotor task determining food position and so the quality of food processing (often described as 'chewing efficiency'). The goal of this study was to analyze the position, shape and movement of food cycle by cycle through complete sequences. Feeding sequences were recorded at 30 fps using P-A Videofluorography (VFG) in nine subjects feeding on four foods dusted with barium sulfate: cookie, banana and two meat samples. Samples of beef were cut from the same muscle: variation in cooking temperature produced texture variation (tender and tough). Tapes were analyzed using stop-frame and slow motion, sections of records were acquired to computer using Scion Image software and single frames (images) examined. While details of the process varies with food texture and between individual subjects, there are three consistent findings for all foods: 1) food is constantly repositioned on the occlusal table such that the bite load is applied to different parts of its surface in successive cycles; 2) tongue movement contributes to food reduction through the application of shear and tensile forces; 3) both the cheek and the tongue contribute to the repositioning of food onto the occlusal surface of the active side but this is not a 1:1 pattern of activity, rather the tongue pushes food towards the cheek in most cycles but the cheek pushes back in only some cycles. Further, once the initial lump is separated into pieces, the most medial fragment(s) may be transferred to the 'balancing' side. These lumps are then processed on that side as the mandible moves medially during the intercuspal phase: i.e. bilateral mastication frequently occurs. **We conclude that the tongue has a primary role in food management contributing to food breakdown but that cheek activity occurs intermittently in response to food position.** *Supported by USPHS NIH NINCD 02123*

CALCIUM ION RELEASE OF A NEW "SMART" RESIN COMPOSITE

N. KRÄMER, W. DISTLER, R. FRANKENBERGER, U. LOHBAUER, and A. PETSCHELT (Policlinic for Operative Dentistry and Periodontology, University of Elangen, Germany)

"Smart materials" are characterized by ion release planned to prevent recurrent caries. Representing a new restorative concept, Ariston®pHc (Vivadent, Schaan, Liechtenstein) is applied without time-consuming adhesive bonding. However, it is one indispensable prerequisite for the clinical success of Ariston® pHc restorations that the release of Ca^{2+} ions remains on a constantly high level.

Therefore the aim of the present in vitro study was to evaluate the long-term calcium ion release of Ariston®pHc over a period of fifteen months. Six Ariston® pHc disks (diameter 11 mm / thickness 2 mm) were stored in 0.9% sodium chloride solution. After one day and subsequently after 1, 2, 3, 4, 5, 6, 9, 12, and 15 months the Ca^{2+} release was determined. The specimens were subjected to a titration using 0.001 M Titriplex® III solution (Merck) unit color change appeared. The Ca^{2+} ion release was calculated according to the consumed amount of Titriplex® III solution. For each investigation the specimens were dried for two hours and subsequently weighed (scale: Sartorius R160P). The results for weight and ion release over time were:

Time [months]	0.04	1	2	3	4	5	6	9	12	15
weight [mg] (SD)	301 (6)	303 (7)	303 (7)	303 (6)	303 (7)	302 (7)	302 (7)	301 (7)	301 (7)	300 (7)
Ca release [µg/ml] (SD)	128 (8)	171 (16)	134 (9)	159 (12)	121 (11)	142 (11)	137 (8)	188 (15)	205 (23)	189 (19)

Relating to the weight of the specimens, no difference was recorded between all investigations (Mann-Whitney U-Test, $p > 0.05$). Within the fifteen months test period, 1585 µg/ml Ca^{2+} ions were measured. For the first six months the release per month was significantly higher than within the following period ($p < 0.05$).

Ariston® pHc fulfills the requirements for a successful caries protection around restorations at least over a period of fifteen months.

MICROLEAKAGE OF PREVIOUSLY RESTORED CLASS II RESTORATIVES AFTER EXPOSURE TO 10% CARBAMIDE PEROXIDE.

D. BARDWELL, C. HABIB, G. KUGEL, N. MEHTA, C. LEONE (Tufts University School of Dental Medicine).

This study evaluated the effect of bleaching with 10% carbamide peroxide on the microleakage of previously restored Class II cavity preparations with hybrid composite Prodigy Condensable® (Kerr Corp) and Dispersalloy® (Johnson & Johnson) amalgam. Ninety-six (96) freshly extracted human molars and premolars stored in physiologic saline and mounted in cold cure acrylic blocks had Class II preparations made 5 mm in depth, 3 mm in width, and 4 mm long. All specimens were randomly divided into 4 groups of 24. Each group had 12 samples serve as controls. Each group was restored with packable hybrid composite, utilizing Prime and Bond NT® (Caulk and Dentsply) bonding agent (two coats/two cures). The other two groups were restored with amalgam after three applications of copal varnish. One group of each, composite and amalgam were lined with a resin reinforced glass ionomer (Vitrabond® 3M Corp.) in a closed sandwich technique (all exposed dentin). Twelve samples of each group were immersed in 10% carbamide peroxide for a duration of seven days and then stored in physiologic saline for fourteen. All samples were thermocycled 500x between 5-55 (+/-) degrees Celsius with a dwell of 30 seconds, then placed in 0.5% Fuschin blue dye solution at 37 degrees Celsius for twenty-four hours. Samples were sectioned with an Isomet low speed saw (Buehler) and examined under 30X magnification with a stereo microscope. An Ordinal scoring system was utilized with 0 = no penetration, 1 = enamel penetration, and 2 = dentin penetration. A Mann-Whitney U test revealed that all four groups had significantly more leakage than their control. ($p. < .002$) **Results indicate exposure to 10% carbamide peroxide significantly increased the microleakage for all four groups with respect to their controls in vitro.**

EFFECT OF DRYING AGENT USE ON SEALANT PENETRATION.

T.J. ADAMS, K.B. FRAZIER, W.D. BROWNING (Medical College of Georgia, Augusta, GA, USA)

Sealants are an effective method to prevent pit and fissure caries; however, retention and efficacy are influenced by the ability of the resin to wet etched enamel and penetrate narrow fissures. **Purpose:** This project evaluated the effect of a drying agent (PrimaDry) on the penetration of a light-cured sealant (UltraSeal XT plus). **Materials & Methods:** Twenty-four extracted mandibular molars were acid-etched (15s), rinsed (15s) and air dried (15s) prior to sealant application to the mesial or distal half of the central groove. Prior to sealant application, the half grooves were randomly treated by one of two methods: 5s exposure to drying agent then redrying (10s) or 10s additional air drying only (control). After light-curing (20s @ 600 mW/cm^2), the sealed teeth were embedded in acrylic and sectioned with a diamond saw into 0.8 mm thick specimens. Both sides of each tooth section were examined by stereomicroscope (30x) and assigned a score of 1 (complete penetration) or 0 (incomplete) if a sealed fissure was present. **Results:** Sectioning provided 69 pairs of specimens each containing 1 treated and 1 control side of the tooth. A total of 39% of the paired sections within a tooth had completely sealed fissures (1) on the treated side and incompletely sealed fissures (0) on the control side versus 13% for "0" and "1" respectively. The difference observed was statistically significant ($p = 0.005$; McNemar Chi-square). **Conclusions: The findings of this *in vitro* study indicate that a drying agent enhances this sealant's penetration into pits and fissures.**

ANTIBACTERIAL EFFECTS OF FLUORIDE-RELEASING MATERIALS.

E. BRAMBILLA, A. FELLONI, M.G. CAGETTI, M. GAGLIANI, F. GARCIA-GODOY & L. STROHMENGER (U of Milan, Italy & U Texas Health Sci Ctr @ SA, USA)

Purpose: To evaluate (1) the antibacterial effect of fluoride-releasing restorative materials on mutans streptococci (MS) and Lactobacillus acidophilus (LA), and (2) the correlation between surface aspect of the materials and bacterial colonization. **Methods:** A strain of MS and LA were isolated from human dental plaque and a pure suspension of the two microorganisms was obtained. F2000 (3M), Dyract AP (Dentsply), Hytac (Espe), Compoglass F (Vivadent), Fuji II (Fuji), Fuji II LC (Fuji), Ketac-Bond (Espe), and Ketac-Molar (Espe) were tested. Ten samples of each material were prepared using a 3-mm Teflon ring mold and tested for both microorganisms examined. Disks of Z100 and Clearfil (non-fluoridated composites) served as controls. A colorimetric technique (MTT assay), based on the reduction of a tetrazolium salt to a purple formazan was used to evaluate the biomass adherent to the disk surfaces after a 24 hour-incubation with the two microorganisms. SEM evaluation of the surface morphology of the materials tested was also performed. **Results:** A one-way ANOVA with the Bonferroni test adjusted for multiple comparisons revealed that for MS, Compoglass F, Fuji II, Fuji II LC, Ketac-Bond, Clearfil and Z100 showed similar antibacterial effects and were significantly ($P < 0.0001$) more effective than all other products in reducing the bacterial growth on their surfaces. Dyract AP had a significantly higher antibacterial effect than F2000 ($P < 0.01$), with in turn was more antibacterial than Hytac ($P < 0.0001$). For LA, Ketac-Molar, Ketac-Bond and Fuji II LC revealed the highest antibacterial effect of all products tested ($P < 0.0001$). Hytac, F2000, and Dyract AP revealed similar antibacterial effects, which were significantly more active than the remaining materials, except Ketac-Molar, Ketac-Bond and Fuji II LC. Fuji II LC and Compoglass F revealed similar antibacterial effects, which were significantly higher than Fuji II. **Antibacterial effects were material-dependent. SEM evaluation revealed no significant relationship between surface roughness of the materials tested and bacterial colonization.**

THE INFLUENCE OF VISCOSITY ON THE PENETRATION ABILITY OF FISSURE SEALANTS.

B. STEPHAN, H. LANG, W.H.-M. RAAB (University of Duesseldorf, Germany)

The ability of sealants to penetrate into a fissure depends on the viscosity of the sealant. The purpose of this study was to evaluate the effect of modified sealant viscosities on fissure penetration.

Extracted caries-free molars (n = 35) were sealed with a fissure sealant (Fissurit® FX, viscosity: 300Pa-s) and 4 experimental modifications of this sealant with different viscosities (ExpA: 3.000 Pa-s, ExpB: 10.000 Pa-s, ExpC: 3 Pa-s, ExpD: 20 Pa-s). The sealants were randomly assigned to teeth in 5 groups. ExpA and ExpB were also subjected to ultrasonic activation. After storage in water the teeth were sectioned longitudinally in a buccal-lingual direction (3 sections / tooth), stained with Toloudine blue and examined using a stereomicroscope. The penetration (percentage of fissure filled with sealant) was assessed with a 0.25 mm grid.

In shallow or wide fissures no differences between the materials were found. Significantly better penetration of the low viscous materials was observed in deep fissures with widths less than 2 mm ($p < 0.05$ -ANOVA). Ultrasonic activation did not increase penetration.

width/depth		C	D	FX	A	B
1/1	%	94	97	98	63	37
1/2	%	100	100	100	100	45

width/depth		C	D	FX	A	B
1/3	%	100	98	95	98	68
2/1	%	100	100	98	50	51

width/depth		C	D	FX	A	B
2/2	%	100	100	100	56	13
2/3	%	100	97	95	100	78

Low viscous materials exhibited a higher penetration ability in deep fissures. However, high viscous materials with increased wear resistance might be advantageous in shallow fissures.

COMPONENT ELUTION FROM DENTAL PIT AND FISSURE SEALANTS.

H.J. MOON, Y.K. LEE, B.S. LIM, C.W. KIM (College of Dentistry, Seoul National University, Seoul, Korea)

The estrogenic effect of Bisphenol A was targeted because BP is present as an impurity in some resins (Bis-GMA) and as a degradation product from other resins. 75 vol % ethanol solution has been used as a food-simulating liquid, and solubility parameter of which matches that of resin. The purpose of this study was to identify and quantify Bisphenol A (BP), TEGDMA (TG), UDMA (UD), and Bis-GMA (GM) that might be released from seven resin-based pit and fissure sealants (CON; Concise, PFS; Pit & Fissure Sealant, ELI; Elite, FSF; Fissurit F, TFI; Teethmate F-1, UXP; Ultraseal XT Plus, and HEL; Helioseal). Specimens were cured by using a 1mm (T) x 5 mm (D) acrylic mold, and were extracted with 75% ethanol (ET) and artificial saliva (AS) for 1, 7, 14, 21, and 28 days. The extracts were analyzed by HPLC. All the components except BP were highly leached at the initial stage, so the amounts of components leached were not linear with the immersion time. In AS, TG was leached only, In CON, PFS and ELI group, there were significant differences in the amount of eluted TG depending on the solution ($p < 0.05$). The amount of eluted BP was various depending on the material (0.023-2.790 μg/mg). TG was highly eluted from ELI, CON, and HEL in both ET and AS. GM leached from all sealants whereas UD leached only from PFS, ELI, FSF, and UXP. The detected amount of BP and GM was not correlated ($p > 0.05$). GM did not seem to decompose to BP during the 28 days immersion period. It was concluded that 75% ethanol solution penetrates the matrix of pit & fissure sealant, which has been shown to maximize the elution of resin components.

ESTROGENICITY OF DENTAL RESINOUS MATERIALS DETERMINED BY REPORTER GENE ASSAY.

H. TARUMI, S. IMAZATO, M. NARIMATSU, M. MATSUO, S. EBISU (Osaka University, Osaka, Japan).

Much attention has been focused on the estrogenicity of dental resinous materials since Bisphenol A (BPA) was reported to be identified in the saliva of patients treated with a proprietary sealant. Although several subsequent studies demonstrated that no BPA had been eluted from any sealants, none of them tested the estrogenicity of the materials by means of a bioasaay, and there is continuing controversy as to whether or not the dental resins can mimic the effect of hormones. The purposed of this study were to investigate the estrogenic effect of eight commercially available Bis-GMA based resins by a reporter gene assay, and to elucidate the relevance of the components included to the estrogenicity. Unpolymerized resin pastes were incubated with HeLa cells transfected with both human estrogen receptor alpha and firefly luciferase gene, and the estrogenicity of the samples was determined from the relative luciferase activities. The compositions of the resins were analyzed by HPLC and GC-MS, and the estrogenic activity of the constituents was also measured. Among eight resins tested, two sealants (Delton, Dentsply/Ash, DL; Defender, Henry Schein, DF) showed estrogenic activities at 5 μg/ml and greater. BPA was not identified in any of the materials including those two estrogenic sealants, but Bisphenol A dimethacrylate (Bis-MA), which is also estrogenic, was found in DL and DF at 4.1 and 3.4 w/w %, respectively. The amount of Bis-MA in the specimens of DL and DF at 5 μg/ml was greater than the minimum concentration (91.1 ng/ml) to show estrogenicity. **It can be concluded that two proprietary sealants showed estrogenicity and the estrogenic activity of these sealants was associate with Bis-MA, rather than BPA. These findings suggest that it is not appropriate to restrict the use of all dental resins, but Bis-MA should be avoided.** *Supported by JSPS (10771046, 11877333).*

RETENTION OF BACTERIA ON PROVISIONAL CROWN AND BRIDGE RESINS.

D. YAYLALI, D. SEN, E. PAMUK, F. ÇETINER (Univ.Istanbul Faculty of Dentistry, TURKEY).

The purpose of this study was to compare the effect of polishing on bacterial retention on four provisional crown and bridge resins: 2 methacrylate based and 2 BIS-GMA based resins. Four provisional crown and bridge resins: Group I (Tab 2000, Kerr), Group II (Dentalon Plus, Kulzer), Group III (Protemp ESPE), Group IV (Isotemp 3M) were used in this study. Group I and II were methacrylate based and Group III and IV were BIS-GMA based resins. 16 standard samples of each group were made using circular stainless steel molds of 10mm of diameter and 2mm high. Each material was mixed and polimerized according to their manufacturer's instructions. Each group was then divided into two subgroups of 8 samples. No polishing was done for first subgroups, while the second subgroups were polished using high gloss polishing wax (S Remco Dental). Samples were prepared under sterilized conditions. The samples were hung in Tryptic Soy Broth Difco containing 5% sucrose. The media were inoculated with Streptococcus mutans NCTC 10449. After 5 days the colonies were counted and evaluated. Kruskal Wallis and Mann Whitney U tests were used to evaluate the results. The results and standard deviations were given in the Table as cfu countx $10^9/mm^2$. For all groups the difference between the polished and unpolished subgroups were statistically significant ($p < 0.001$). The bacterial retention on polished samples of Group II were significantly higher than the polished samples of the other groups ($p < 0.001$). The bacterial retention on the unpolished samples of Group I and Group II were significantly higher than Group III and IV ($p < 0.001$).

	Group I ($10^9/mm^2$)	Group II ($10^9/mm^2$)	Group III ($10^9/mm^2$)	Group IV ($10^9/mm^2$)
polished	8.86±4.5	138.7±111.7	9.81±13.9	0.7±0.6
unpolished	1191.1±1276.1	2252.2±1391.5	7525±49.38	37.65±24.6

Conclusions: Polishing was more effective in decreasing the bacterial retention on BIS-GMA based crown and bridge resins than decreasing the retention on methacrylate based resins.

ACCURACY OF VARIOUS DIAGNOSTIC METHODS IN DETECTING FISSURE CARIES LESIONS, A PILOT STUDY.

J.B. SUMMITT, D.-H. SHIN, F. GARCIA-GODOY, G.K. GOR (UTHSC, San Antonio, TX & Dankook Univ, Cheonan, Korea)

The accuracy of four methods of detecting dentin caries lesions at the base of fissures was compared, using histologic examination as the gold standard. Twenty extracted human lower molars, with no visual evidence of dentin caries lesions in the dentin adjacent to fissures, were examined by one evaluator using film radiography, laser fluorescence (Diagnodent, KaVo), Cari-D-Tect caries disclosing dye, and a sharp #23 explorer. The Diagnodent was calibrated in a healthy area of surface enamel for each tooth examined, then passed along the fissure system; any portion of the fissures causing a reading of 11 or more was charted positive for dentin demineralization at the base of the fissure. The disclosing dye was applied to fissures for 10 seconds, then the teeth rinsed and dried; areas of fissures retaining stain were charted positive for dentin demineralization at the base of the fissure. The explorer was the last method tested; the tine was pushed with firm pressure into multiple sites in the fissures; those areas requiring some tug to remove the tine were charted positive. Teeth were ground mesial to distal in 1mm increments and the dentin at the base of fissures examined for demineralization. Specificity and sensitivity were calculated and results were analyzed using the kappa statistic as shown below.

Diagnostic method	Sensitivity	Specificity	Kappa	p-value
Radiographic	100.00%	76.92%	0.70	0.000002
Tactile (explorer)	75.00%	87.50%	0.60	0.0003
Caries disclosing dye	60.00%	80.00%	0.30	0.0524
Laser fluorescence	90.91%	100.00%	0.90	0.0

Laser fluorescence and radiographic examinations yielded the most accurate diagnostic information. The caries disclosing dye was the least accurate.

CARIES AND PERIODONTAL STATUS OF OLDER ADULTS IN A CLINICAL TRIAL

L.V. POWELL, R.E. PERSSON, H.A. KIYAK, P.P. HUJOEL, G.R. PERSSON, M.I. MACENTEE, C.WYATT. (Universities of Washington and British Columbia)

This presentation discusses the protocol and baseline information for the 5-year clinical trial entitled Trials to Enhance Elders' Oral and Tooth Health (TEETH). The purpose of the clinical trial is to test the effectiveness of a 0.12% chlorhexidine (CHX) rinse regimen in maintaining teeth in an older population. One thousand and one hundred subjects between the ages of 60 and 75 were enrolled at two sites; 700 in Seattle, WA and 400 in Vancouver, BC. The two samples were similar, with 60% female in Seattle, 54% in Vancouver; and 49.6% non-Caucasian in Seattle, 53.8% in Vancouver (mostly Asians). Each subject received a baseline examination for caries, periodontal disease, and tooth loss. They also received a supra- and subgingival cleaning and panorex. They were then placed on wither a daily CHX or placebo rinse for one month followed by weekly rinses for five months. This regimen is repeated at 6-month intervals. At one-year intervals, examinations and a supragingival cleanings are repeated. At baseline examination, the oral health characteristics of the population is as follows:

Per subject	Seattle, WA	Vancouver, BC	Both sites
Mean # of teeth	21.8	22.4	22.0
DMFS - Crown	37.5	27.0	33.7
DMFS - Root	4.4	4.9	4.6
Attachment loss	2.4	3.0	2.7
# teeth with loss of attachment > 5mm	2.4	3.6	2.9

This research was supported by NIH Grant #RO1 DE12215.

DENTIFRICE USAGE ACCORDING TO BRANDS AND TOOTHBRUSH SIZES.

P. BHURIDEJ, S.M. LEVY, J.J. WARREN, H.L. KIRCHNER (University of Iowa, Iowa City, IA, USA).

Dentifrice ingestion has been identified as a risk factor for dental fluorisis, so that assessment of the amount of dentifrice used by the young child subjects is important. This study was conducted to determine the amount of dentifrice represented by each of seven drawings depicting dentifrice placed on toothbrushes as used in the Iowa Fluoride Study. The five most commonly used dentifrices for our participants when aged 1 to 3 years old were determined and included in the study. Three sizes of Oral B® toothbrushes were used (size 5, size 20, and Nickelodeon). For each drawing, each brand of dentifrice was placed three times on each size of toothbrush by one examiner. SAS was used for the data analysis with the level of significance at 0.05. The five most commonly used dentifrices, in order of decreasing use, were Crest® Sparkle, Oral B® Sesame Street, Crest® Regular Paste, Crest® Tartar Control Paste, and Colgate® Junior. ANOVA indicated that mounts use for each drawing differed with the sizes of toothbrush, brands of dentifrice, and their interactions. The adjusted average amount of dentifrice for the seven drawings, in descending order, were 1.65 g, 1.04 g, 0.80 g, 0.63 g, 0.26 g, 0.10 g, and 0.03 g. Overall, significantly more dentifrice was place on Oral B® Nickelodeon brushes than on Oral B® 20 and Oral B® 5. Amounts placed on Oral B® 20 brushes were also greater than on Oral B® 5. Similar mean amounts were found among the five brands of dentifrice, except that Crest® Sparkle had significantly greater amounts of dentifrice placed than Oral B® Sesame Street and Colgate® Junior. However, the actual fluoride amount used depends on the fluoride concentration of each brand of dentifrice. **The results indicated that brands of dentifrice and sizes of toothbrushes affected the amount used.**

Supported by NIDCR grant 2-RO1-DE09551.

ASSOCIATION BETWEEN OPTIMALLY FLUORIDATED WATER AND TOOTH-SPECIFIC FLUORISIS SEVERITY.

S.A. Griffin, E.D. Beltran, S.A. Lockwood. Surveillance, Investigation and Research Branch, Division of Oral Health, CDC, US.

The economic cost of dental fluorisis depends upon its severity and which teeth are affected. This study investigated the association between optimally fluoridated water and very mild/mild (VMF) and moderate/severe (MSF) fluorisis in each of the 28 permanent teeth. The study sample included children from the 1986/87 National Survey of US School-children (n = 7362), aged 7-17 who were not exposed to fluoride drops or tablets, and who had a continuous single residence with fluoridation status consistent with the fluoride content of a school water sample. The school sample was used to measure water fluoridation concentration at 4 levels; none (ppm < = 0.3); low (0.3 < ppm < 0.7); optimal (0.7 < = ppm < = 1.2); and high (ppm > 1.2). Polychotomous regression examined the association between tooth-specific fluorisis severity (none/questionable; VMF; and MSF) and age and water fluoridation exposure. The marginal probability (change in probability for exposure to optimally fluoridated water) of VMF was significant in all teeth ($p < 0.05$) and was lowest in the incisors (0.15-0.17) and highest in the mandibular second bicuspids (0.29-0.30). The marginal probability of MSF was significant ($p < 0.05$) in maxillary posterior teeth (0.01-0.04) and mandibular cuspids and bicuspids (0.01-0.03). **Exposure to optimally fluoridated water is associated with increased risk of VMF in all teeth and a small increased risk of MSF in the posterior teeth and mandibular cuspids. To the extent that MSF is an aesthetic condition, the burden of disease will be lower if it affects primarily posterior teeth.**

CHLORHEXIDINE VARNISH IN THE PREVENTION OF MATERNAL TRANSMISSION OF MUTANS STREPTOCOCCI.

A.P. DASANAYAKE, S. WHITE, Y. LI, H. WIENER, S.V. VERMUND & P.W. CAUFIELD (Specialized Caries Research Center, U. of Alabama at B'ham, Birmingham, AL)

Previously we have reported the efficacy and safety of a chlorhexidine varnish (Chlorzoin®) in reducing the salivary levels of mutans streptococci (MS) in a group of adult females. This report is based on the follow-up data obtained from the same cohort in relation so the ability of this varnish to prevent the transmission of MS from mother to her infant. A group of predominantly African-American women and their first-born babies were the participants of the study. As of Aug 1999, we have applied Chlorhexidine (N = 37) or a placebo varnish (N = 37) to the dentition of the mother at a time when the baby is about 6 months of age. Three more applications at weekly intervals and subsequent applications at 6 months intervals followed the initial application. Demographic, dental, medical, and dietary data were gathered from each subject at each visit and MS levels and the levels of other oral bacteria were enumerated by plating stimulated saliva samples. Data were analyzed using the repeated measures of ANOVA and survival analyses. The baseline MS levels, caries, antibiotic use, or the mouthwash use were not significantly different between the two groups. As reported before, the treatment group exhibited significantly lower levels of MS over time ($p < 0.001$). Data indicate that the group differences in maternal MS levels were still significant at 18 months of follow-up. Five children in the treatment group and nine children in the placebo group acquired MS during the follow-up period ($p = 0.24$). The average time to MS acquisition in the treatment group was 17 months, and in the placebo group, 21 months ($p = 0.31$, log-rank). **We conclude that the chlorhexidine varnish is a safe and an effective intervention in reducing the salivary levels of mutans streptococci.** The ability of this intervention in preventing the maternal transmission of MS to infants and its' effect in reducing the child's caries experience as a result of reduced or delayed transmission of MS is still under investigation.

Supported by NIH/NIDR Grant DE 11147-05.

RELATIVE ROLE OF DENTIFRICE AND THE TOOTHBRUSH IN PLAQUE REMOVAL.

M.J. CRONIN[1], W.Z. DEMBLING[1], D.M. JACOBS[2], M.L. LOW[2], and D.A. WEBER[2] ([1]New Institutional Service Company, Northfield, New Jersey, USA; [2]Oral-B Laboratories, Belmont, California, USA).

Fluoride dentifrices play an essential role in caries prevention and removal of stained pellicle. The role of dentifrice in the removal of plaque during toothbrushing is less defined. The objective of this study was to determine the relative importance of dentifrice in plaque removal during toothbrushing. The plaque removal efficacy of a manual toothbrush with water (TB + W) was compared to the same manual toothbrush with a commercial fluoride dentifrice (TB + D) following a single, unsupervised use. Ninety-three subjects completed an examiner-blinded, crossover designed clinical trial conducted among an urban population. Subjects meeting defined entrance criteria abstained from all oral hygiene for 23 to 25 hours prior to each visit. Oral hard and soft tissue examinations and plaque assessments were conducted at each visit. Plaque was evaluated using the Proximal/Marginal Plaque Index both before and after brushing for 60 seconds. Subjects were randomly assigned to the TB + W or TB + D treatment groups and returned approximately 2 weeks later to repeat the procedure with the alternate treatment. All subjects were supplied the same commercial TB (Oral-B® Indicator®, Oral-B Laboratories, Belmont, CA, USA) and dentifrice (Crest® Regular Cavity Protection, Procter & Gamble, Cincinnati, OH, USA). Differences between treatments were analyzed using an ANOVA. Both treatments yielded significant ($p = 0.0001$) reductions in whole mouth plaque compared to Baseline values. The TB + W group yielded a significantly ($p = 0.0020$) greater plaque reduction of 38.3% compared to the TB + D group with a 34.9% reduction. **These results suggest that dentifrice does not play a major role in the removal of plaque during a single use brushing.**

ANTICALCULUS EFFECTS OF A ZINC CHLORIDE/ ESSENTIAL OIL-CONTAINING DENTIFRICE.

M. CRONIN[1], B. KOHUT[2], J. COELHO[2], M. WU[2], R. PARIKH[2] ([1]New Institutional Service Co., Northfield, NJ and [2]Warner Lambert Co. Morris Plains, NJ)

This proof of principal calculus clinical study was conducted as a part of research program to evaluate an experimental dentifrice formula combining zinc chloride, a known anticalculus ingredient with a fixed combination of essential oils, recognized antiplaque/ antigingivitis agents. A prototype formulation containing 0.5% zinc chloride and a fixed combination of essential oils was evaluated in this randomized, parallel, double blind study for anticalculus efficacy. Crest Tartar Control was included as a positive control and a Crest Regular as a marketed negative control. After an 8 week pre trial phase, qualifying subjects (Volpe-Manhold Index score ≥ 7.0) were given a supragingival prophylaxis, stratified by calculus scores, and randomly assigned to one of three treatment groups. Subjects proceeded to brush twice daily with their assigned dentifrice and were scored for calculus after 16 weeks. ANCOVA revealed that the positive control and the essential oil/zinc chloride prototype exhibited statistically significant reductions in calculus formation of 30.3%, and 23.6%, respectively, relative to the negative control dentifrice.

Treatment Groups	Crest Regular	Crest Tartar Control	ZCL/EO prototype
N	61	63	63
Baseline mean (S.D.)	12.0 (7.5)	11.2 (5.7)	11.0 (5.2)
16-wk adj. mean (S.E.)	12.3 (0.5)	8.6 (0.5)	9.4 (5.2)
p-value (vs. Crest Reg.)	N/a	<0.001	<0.001

The results demonstrated that zinc salts are compatible with the essential oils and provide clinically relevant anticalculus benefits. Furthermore, these results confirm pre-clinical studies.

ANTICALCULUS EFFECT OF TWO ZINC CITRATE/ ESSENTIAL OIL-CONTAINING DENTIFRICES.

N. CONFORTI[1], S. SANTOS[2], S. MANKODI[1], B. KOHUT[2], M. WU[2] ([1]Dental Products Testing Co., Lake Worth, FL, [2]Warner-Lambert Co., Morris Plains, NJ)

The anticalculus activity of oral care products containing zinc salts has been well established in the literature. This study assessed the feasibility of incorporating zinc citrate, a known anticalculus ingredient, into a dentifrice formulation containing a fixed combination of essential oils, a known antiplaque/antigingivitis agent.This randomized, parallel, double-blind study evaluated the potential of two essential oil dentifrice formulations containing different levels of zinc citrate (1.0% and 2.0% ZCT) to reduce supragingival calculus formation compared to a marketed control dentifrice, Crest Regular. Following a three month pre-test phase, subjects received a dental prophylaxis, were stratified into three balanced groups on the basis of Volpe-Manhold calculus scores and brushed twice daily with their assigned dentifrice for three months. One hundred ninety-six evaluable subjects completed all phases of the study. ANCOVA revealed that the 1.0% ZCT and 2.0% ZCT essential oil dentifrice formulations provided significant reductions in calculus formation of 26.4% and 29.0% ($p < 0.001$), respectively, compared to the control dentifrice, Crest Regular.

Treatment Groups	Crest Regular	1.0% ZCT	2.0% ZCT
N	67	66	63
Baseline mean (S.D.)	14.0 (5.1)	14.2 (4.8)	13.9 (4.7)
Final mean (S.E.)	12.0 (0.5)	8.8 (0.5)	8.5 (0.5)
p-value (vs. Crest Regular)		<0.001	<0.001

The magnitude of calculus reductions is similar to those levels obtained by other zinc salt formulations. ***These results demonstrate the ability to develop essential oil dentifrice formulations containing zinc citrate that provide clinically relevant calculus reductions in known calculus formers.***

A COMPARISON OF TWO MOUTHRINSE AGENTS USED DURING HEAD/NECK RADIATION.

M. VITELLO and S.B. CIANCIO. V.A. Medical Center, Buffalo, NY. USA

The object of this study was to compare the efficacy of 2% viscous Lidocaine (Xylocaine) topical anesthetic to 1% Dyclone topical anesthetic. Both products were in a 1:1 solution with Maalox. Dosage was 1 tsp. (5cc) tid prior to meals and subjects swished and swallowed. Twenty male patients were randomly selected (ages 47-78; mean = 59). All patients were on a seven week radiation therapy program with consecutive treatments five times per week (200 cGy per day = 7000 cGy Total). Eight patients had natural dentitions, twelve were edentulous. Each patient was monitored for ten weeks for degree of mucositis, oral hygiene (plaque and gingivitis where applicable) and review of a daily diary for duration of comfort during deglutition. The results showed that after 2 weeks of treatment, the duration of comfort for the dyclone users was 852% greater than the lidocaine users, after 4 weeks: 869%, after 6 weeks: 650%, 8 weeks: 606% and after 10 weeks: 619%. All between group differences were statistically significant ($p < 0.05$). The degree of mucositis in both groups peaked after 4-6 weeks and reached the lowest point at 10 weeks. The fact that the duration of comfort lessens as length of treatment increases parallels the decrease in the degree of mucositis. **The results of this study suggest the two products tested produce an anesthetic effect. Dyclone produced a more intense, longer lasting effect, therefore, enabling more complete and comfortable deglutition.**

Supported in part by AstraZenecaLP.

FUNCTIONALITY OF TOOTHBRUSH/TOOTHPASTE SYSTEMS.

J.J. Hefferren, L. Coffman and M.L. Berg, University of Kansas, Lawrence

How effective are manual and electric brushes in selectively removing stain from accessible tooth surfaces? The timers on many electric brushes have encouraged longer brushing times. Electric toothbrushes seem to be used with somewhat lighter brush head loads. The efficacy of the toothbrush/dentifrice system to mechanically clean teeth can be measured in the laboratory using mechanical brushing machines and simulated dental substrates. For this methodology development study, three electric toothbrushes, identified as A, B, C, were selected to represent circular and oscillating bristle action. ADA medium and soft manual reference toothbrushes were used as reference brushes. ISO abrasivity reference calcium pyrophosphate was used as reference for both abrasion and cleaning study phases. For wear and cleaning studies, brushes were used with slurry of 5gm reference calcium pyrophosphate in 25ml of 10% glycerin/1% carboxymethylcellulose/water on cross action brushing machine. All brushes were used for one minute with calcium pyrophosphate reference slurry. Manual brush was used with 300gm load at 60 strokes/min., while electric brushes were used with 50 or 150gm load at 16 strokes/min. Brushed specimens included non-coated and latex-coated flat black acrylic strips. Simulated plaque-stain removal was measured with Minolta CM-5031 spectrometer. Wear was measured with Federal Surfanalyzer® 5000 system. For cleaning studies, the soft manual was somewhat more effective than the medium manual and comparable to two of the three electric toothbrushes. The third electric brush was a more effective cleaner. Wear occurring under simulated plaque-stain ranged from ½ to 1/20th that obtained with non-stain covered substrate. **With one minute of normal brushing, wear with all brushes was minimal and was much less with plaque-stain coverage, suggesting cleaning can be obtained with minimal wear.** *Supported in part by Braun AG.*

STATISTICAL DIFFERENCES BETWEEN CHILDREN AND ADOLESCENTS SUBMITTED TO DIFFERENT HYGIENE MOTIVATION METHODS.

E. SABA-CHUJFI, M.E.C. SABA, A.K. SABA, R. SARIAN, C.J. LOPES, E.C. QUEIROZ-SILVA. Camilo Castelo Branco University, Sao Paulo, Brazil

The purpose of this study was to compare the effectiveness of different oral hygiene motivation methods when applied to 60 children and 120 adolescents (ranging from 7 to 16 years-old) with 100% of bacterial plaque. The methods tested were: 1. Direct Individual Orientation (on models and own mouth) (DIO); 2. Direct Individual Orientation combined with an elucidative brochure (DIOB); 3. Direct Individual Orientation associated with an theoretical class using slides (DIOS); and 4. Direct Individual Orientation combined with a video (DIOV). The results were compared with a Control-Group (CG). This group did not receive any motivational approach. The probable interference from parents, relatives and colleagues were neutralised in each group. The weekly evaluations on the plaque levels were always conducted by the same professional. The selected Plaque Index was the O'leary et al. (J.Periodont. 43:32, 1972) Plaque Control Record. The Mann-Whitney U - Wilcoxon Rank Sum W Test (Z_{critic} = 1.96) demonstrated the following results at the end (T_4) of the experiment: DIO Z_{calc} = 1.39; DIOB Z_{calc} = 1.63; DIOS Z_{calc} = 3.32* and DIOV Z_{calc} = 2.62* ($p < 0.01$). **It was concluded that 1) all the methods effected a meaningful reduction on the original bacterial Plaque Index of children and adolescents compared to the CG that remained at 100%; 2) in spite of the period of the experiment and of the method applied, adolescents showed always a higher bacterial Plaque Index, and 3) the most significant results were observed on the DIOS and DIOV methods.**

ANTI-BACTERIAL AND ANTI-PLAQUE EFFICACY OF A POLIHEXANIDE MOUTHRINSE.

A. WELK[1], M. ROSIN[1], B. SCHMIDT-MARTENS[1], CH. SCHWAHN[1], P. RUCOLPH[2], TH. KOCHER[1] and A. KRAMER[2] ([1] Department of Operative Dentistry, [2] Institute of Hygiene and Environmental Medicine, University of Greifswald, Germany)

Polihexanide is known as an effective antiseptic in medicine. Its use in the oral cavity is ever more frequently discussed. The purpose of this clinical study was to determine the efficacy of antibacterial activity and the ability to inhibit plaque formation of polihexanide compared to established mouthrinses. A 0.2% polihexanide mouthrinse (A) was compared with two well-researched positive control rinses, one of which was a 0.12% aqueous chlorhexidine solution (B) and the other a 0.3% Triclosan/2% Copolymer mouthrinse (Colgate total) (C), and with a negative control placebo rinse (10% ethanol, flavour) (D). The controlled clinical study was a double blind, randomised, four replicate cross-over design. Plaque regrowth was assessed with the Turesky modification of the Quigley & Hein plaque index. The antibacterial effect was assessed by taking bacterial counts on the tooth surface (smears from the buccal surface of 16/26) and mucosa (smears from the buccal mucosa in opposite of area 16/26). 15 volunteers participated, and on day 0 of each study period were rendered plaque-free, ceased toothcleaning, and rinsed 2 x daily with the allocated mouthrinse. On day 4, plaque was scored and smears were collected according to the protocol. Washout periods were 10 days. Data were analysed with the t-test using the SPSS. Mouthrinse A was significantly better at inhibiting plaque than the placebo (D), but no significant differences could be observed between A & B and A & C. Bacterial count reductions (tooth surface and mucosa) with polihexanide (A) were significantly greater compared to the placebo (D) and Triclosan (C), but significantly lower compared to Chlorhexidine (B) (tooth surface) and equally effective compared to Chlorhexidine B (tooth surface) and equally effective compared to Chlorhexidine B(mucosa). These results show that a 0.2% polihexanide mouthwash could be an alternative to established mouthrinses in caries and parodontitis prevention.

EFFICACY OF COMPUTER-CONTROLLED LOCAL ANESTHESIA DURING SCALING AND ROOT PLANING.

P.M. LOOMER and D.A. PERRY. (UCSF, San Fransisco, California, USA).

Local anesthesia is commonly required for patient comfort and completeness of treatment when performing scaling and root planing to treat moderate periodontal disease. However, patients are often fearful of the pain associated with local anesthetic delivery. The purpose of this study was to compare pain perception of local anesthesia delivered using a computer-controlled device (Wand™, Milestone Scientific) to conventional syringe injections, and monitor the efficacy of treatment. Twenty healthy adults with moderate adult periodontitis and moderate to heavy calculus were enrolled in this randomized crossover trial, stratified on gender. One blinded examiner assessed clinical parameters at baseline and 1 month post-treatment. Anesthesia technique using 2% lidocaine with 1:100 epinephrine was randomly assigned for each half-mouth treatment, allowing subjects to serve as their own control. One experienced clinician provided local anesthesia: IA, LB, PSA and AMSA (anterior middle superior alveolar nerve block, Friedman 1997) using the computer-controlled pressure and volume device; and IA, LB, PSA, MSA, ASA, GP and NP with traditional anesthetic syringes. Subjects completed 100mm visual analogue scales (VAS) and 5-point verbal rating scales (VRS) after each injection to evaluate pain perception. After scaling was completed VAS and VRS overall assessments of pain during treatment were completed. Mean VAS and VRS for conventional injections was 9.07 ± 3.98 and 0.93 ± 0.03 respectively compared to 5.21 ± 1.40 and 0.71 ± 0.20 for test injections prior to scaling. Preliminary comparison of VAS after injection for 4 subjects revealed computer-controlled injections to be significantly less painful ($p = 0.03$) than conventional injections. Supported by a grant from Milestone Scientific.

VOLATILE SULFUR COMPOUNDS (VSC) IN THE MOUTH AIR IN TWO STRESSFUL CONDITIONS.

C.S. QUEIROZ, C.M. TABCHOURY, M. FUJIMAKI, J.A. CURY, (Faculty of Dentistry of Piracicaba - UNICAMP, Brazil).

Bad breath can be detected by high concentration of VSC present in the air collected in the oral cavity. There are several predisposing factors to bad breath and stress has been reported as one of them. Thus, two stressful conditions were evaluated: Study I - Biochemistry exam taken by undergraduate dental students. Study II - Premenstrual syndrome (PMS). Thirty-four healthy students took part of Study I; the VSC concentrations were measured a week before, on day and a week after the exam using Halimeter (Interscan Co). In study II, fifty women with good oral and general health conditions were selected and divided in two groups: A (Control Group) = 27 women without PMS symptoms; B - 23 women with PMS symptoms. The measurements were performed during non-menstrual, PMS and menstrual periods. Statistical analysis ANOVA and Tukey test showed in Study I a significative increase of VSC concentration ($p < 0.05$) on the exam day (90.41 ± 51.27) in relation to a week before (54.00 ± 28.00) and a week after (57.82 ± 29.07). Study II: in Group A - VSC concentration was greater ($p < 0.05$) in the menstrual period (75.70 ± 26.85) than PMS and non-menstrual periods respectively (54.00 ± 18.84 and 53.89 ± 16.86); in Group B - VSC concentration was greater ($p < 0.05$) in both menstrual and PMS period respectively (81.26 ± 34.43 and 78.39 ± 38.90) than non-menstrual period (56.87 ± 20.63). The VSC concentration during the PMS period was higher ($p < 0.05$) in Group B than Group. **The results suggest that stressful conditions can be a predisposing factor for bad breath and menstrual cycle interferes in oral VSC concentration.** *Supported by FAPESP (Proc. 98/01100-7).*

ACIDURIC FLORA OF ACTIVE ROOT CARIES LESIONS.

S.R. BRAILSFORD, B. SHAH, S.C. GILBERT, D. CLARK, D. SIMONS, S. ADAMS, C. ALLISON, D. BEIGHTON (GKT Dental Institute, London, UK; Unilever Research, UK).

Previously it has been shown that the predominant flora of root caries lesions is lactobacilli and *Actinomyces* spp. but little is known of the aciduric flora within these lesions. In this study the predominant aciduric flora of active root caries lesions was investigated. Dentine from soft, active root caries lesions from individual patients ($n = 14$) was sampled by passing a sterile excavator through the vertical dimension of the lesion cleaned of overlying plaque. The sample was placed in transport medium, disaggregated using glass beads and lactobacilli, yeasts, streptococci and *Actinomyces* spp. enumerated and identified. Sample dilutions from 10^{-1} to 10^{-8} were inoculated x12 in microtitre trays containing aciduric media (Brain Heart Infusion broth buffered to pH 4.8 and pH 5.2) and BHI broth (pH 7.0) and incubated for 5 days at 37°C anaerobically. The organisms growing in the 10 terminal wells were subcultured and identified. The mean total viable count (as Log_{10}) per lesion sample was 6.88 ± 0.14. The predominant aciduric taxa at pH 4.8 were lactobacilli (55.5% of isolates), *A. israelii* (20.4%), *A. naeslundii* (8.8%) and *Stroptococcus* spp. (7.3%) whereas at pH 5.2 lactobacilli formed 35.5% *A. israelii* 13.8%, *A. naeslundii* 13.8%, and Streptococci 17.4%. The predominant taxa at pH 7.0 were *A. naeslundii* (36.3%), *A. israelii* (13.3%), lactobacilli (26.7%) and Streptococci (5.9%). *S. mutans* were not recovered from any subject. Lactobacilli are both aciduric and acidogenic and it was expected that these organisms would form a significant proportion of the aciduric flora of infected root dentine. However, *Actinomyces* have not previously been reported to possess the ability to grow at low pH, and in vitro studies show these organisms unable to survive below pH 5.2. **This study provides evidence that lactobacilli, *A. israelii* and *A. naeslundii* are the predominant aciduric taxa of soft active root caries lesions.** *Funded by GKT.*

SALIVARY FUNCTION IN FULL DENTURE WEARERS.

D.A. JOHNSON, C.-K. YEH, M.J. Saunders, M.W.J. DODDS. (U of Texas Health Science Center and GRECC, ALMD, South Texas Veterans' Health Care System, San Antonio, TX)

To determine salivary function in denture wearers, a data base consisting of 1147 individuals in the OH:SALSA study was searched for subjects wearing an upper and/or lower full denture (DW, $n = 115$). The comparison group consisted of dentate individuals of the same age range (DENT, $n = 163$) who had a score of ≥12 dental functional units (2 points for each of 8 molars and 1 point for each of 8 premolars in occlusion). The analyses included flow rates for unstimulated whole (UW), as well as stimulated and unstimulated parotid (UP, SP) and submandibular/sublingual (US, SS) saliva. The concentrations of electrolytes (Na, K, Cl, Ca) in SP, US and SS and the concentration and secretion of several proteins (lactoferrin, secretory IgA, albumin, lysozyme, mucin and cystatin) in SP and/or SS were determined. The salivary variables were subjected to square root transformation prior to two factor ANCOVA using age as the covariate and sex and group (DW & DENT) as factors. Flow rates for DW were significantly reduced for UW ($p = 0.014$), US and SS ($p < 0.0001$ for each). For SP, lactoferrin was significantly increased in DW ($p = 0.009$). In US, both K and Cl were increased for DW ($p = 0.0002$ and 0.0017, respectively) while in SS, Na was reduced ($p < 0.024$) and K was increased ($p < 0.0001$) in DW. For SS, the secretion (μg/min) of secretory IgA ($p = 0.0048$), albumin ($p < 0.0001$) and cystatin ($p < 0.0001$) were reduced for DW. **These findings indicate that denture wearing has a profound effect on UW, US, and SS secretion. Further, the concentrations of electrolytes, potentially important for antimicrobial enzyme function in vivo, are altered as is the output of several antimicrobial proteins. The changes in salivary function may put denture wearers at a greater risk for oral infection.** *Supported by NIH/NIDCR DE10756.*

EFFECTS OF A CHLORHEXIDINE IRRIGANT ON DENTAL UNIT WATERLINE CONTAMINATION.

R. PUTTAIAH, C.M. SARGENT, R. SPEARS, R. CEDERBERG, D. POWERS, Baylor College of Dentistry, The Texas A&M University System Health Science Center, Dallas, Texas.

Dental unit waterlines harbor biofilms and microorganisms that contaminate dental treatment water. The purpose of this study was to evaluate in-vitro efficacy of a 0.12% chlorhexidine gluconate solution (CHG) in controlling both the biofilms and the contamination of the treatment water when used with different dilutions. An automated multi-group dental unit waterline simulation system built to scale and function replicating 4 dental unit waterline system was used in this study. Three treatment groups (G1, G2 and G3) and one control group (G4) were evaluated in this 6 week study. G1 and G3 had mature naturally occurring biofilms in the lines while G2 and G4 had lines free of biofilm. G1 and G3 demonstrated initial contamination in excess of 400,000 colony forming units per mL (CFU/mL) while the others less than 100 CFL/mL. G1, G2 and G3 were treated with undiluted solution over the first weekend. G1 used 1:5 a dilution as an irrigant/coolant for simulated daily use during the first week and a 1:20 dilution for the remainder of the study and served as a control. G2 used a 1:10 dilution and G3 used a 1:5 dilution throughout the study. G4 used tap water as an irrigant/coolant throughout the study. Baseline and post study scanning electron microscopy was conducted on representative samples of lines from each group to study the presence/absence of biofilms. Heterotrophic plate counts using R2A agar were conducted at baseline and twice weekly for each group and the absolute CFU/mL were converted to log_{10} values. Results indicated that the biofilms were controlled in all treatment groups. Heterotrophic plate counts indicated that the effluent contamination in the lines was reduced to ≤ 10 CFU/mL in all treatment groups and remained, while the control group reached contamination levels ≥ 40,000 by the third week of the study. **The results in this study suggest that the periodic contact of a 0.12% CHG solution over the weekend followed by use of up to 1:20 dilution of the 0.12% CHG solution as an irrigant is effective in controlling dental unit waterline biofilms and dental treatment water contamination.** *Support by Diagnostic Sciences, Baylor College of Dentistry – TAMUS HSC and Dentsply Preventive Care.*

How to win over your toughest patients.

LARGE = BLUE
• STARS & PLANETS
• SEASHELL AQUARIUM
• MUSICAL INSTRUMENTS

MEDIUM = WHITE
• SMILEY FACES
• SPORTS
• FRUIT AMBROSIA

SMALL = YELLOW
• TEDDY BEARS & HEARTS
• SMILING DINOSAURS
• SAFARI ANIMALS

Presenting New Oral-B® FUNTRAYS™!

New Oral-B Funtrays help you tackle even the toughest fluoride treatments with appealing graphics patients will cheer about. They're stable to help keep the fluoride in and the moisture out while providing a natural, comfortable fit. Plus the fluoride stays on the teeth — not in the tray. So, for a fun way to administer fluoride to both children and adults, try new Oral-B Funtrays!

Free Oral-B® Funtrays™! 1-800-268-5217

Oral-B®

©2000 ORAL-B LABORATORIES

CDHIP — CANADIAN DENTAL HYGIENISTS INSURANCE PLAN

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION

L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

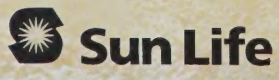
Canadian Dental Hygienists Insurance Plan (CDHIP)

The Canadian Dental Hygienists Association offers a comprehensive insurance plan specifically designed to meet the needs of, and to protect it's members.

CDHA members and their families can benefit from a unique insurance coverage tailored to their needs with the Canadian Dental Hygienists Insurance Plan (CDHIP). This plan includes coverage for:

- Disability Insurance or Life, Accidental Death and Health Care Insurance with Sun Life of Canada
- Commercial General Insurance or Error and Omissions Liability Insurance with F. Pigeon & Sons Insurance Brokers Ltd.
- Home and Automobile Insurance with Canada Life Casualty
- Retirement and Savings with Merrill Lynch

For in-depth information on any or all of these insurance benefits, please contact:



1-800-669-7921

1-800-430-5407

CANADA LIFE
Casualty Insurance Company

1-888-688-0000

1-800-563-6623

CDHIP — THE INSURANCE PLAN MADE FOR CANADIAN DENTAL HYGIENISTS

MERCURY REMOVAL FROM DENTAL WASTEWATER BY A MICROBIAL BIOADSORBENT DERIVED FROM GENETICALLY ENGINEERED BACTERIA.

M. PAZIRANDEH, M.E. STONE, and E.D. PEDERSON. Naval Research Laboratory, Code 6900 Washington, DC 20375 and The Naval Dental Research Institute, 310-A B Street, Great Lakes, III 60088.

The mercury content of dental-operatory wastewater has become an issue in many localities, and its removal is rapidly becoming a matter of concern for dental clinics throughout the United States and Europe. The recent promulgation of method 1631 with a detection limit of 0.5 ng Hg/liter (0.5 ppt) will ultimately decrease Publicly Owned Treatment Works discharge limits and make the discharge of mercury form dental clinics more problematic. The objective of this study was to evaluate the effectiveness of a bioadsorbent (Navsorb®), derived from genetically engineered bacterium expressing a metal blinding motif, for removing mercury from the dental-unit wastewater stream. Dental wastewater was obtained from the naval Dental Research Institute. Fifty ml samples were incubated with various amounts of the bioadsorbent and the clarified waste was analyzed for total mercury content using standard method 245.1 (detection limit 0.0020 ug Hg/liter). Our results demonstrated that the bioadsorbent effectively removed a significant amount of the mercury from the dental wastewater. An initial mercury content of 3.1 mg/liter was reduced to levels ranging from 0.19-to-0.51 mg/liter using different quantities of the bioadsorbent. This represents decreases in mercury content of from 83.5-to-93.9 percent. Currently, we are investigating the capacity of the bioadsorbent and its potential to be utilized in a column operation. **These results suggest using the Navsorb bioadsorbent for the removal of mercury from dental wastewater has great potential.** *Supported by the Great Lakes National Program Office of the United States EPA and the Office of Naval Research.*

TOPOGRAPHY OF THE INITIAL SUPRAGINGIVAL PLAQUE FORMATION.

P. WEIDLICH, R. V. OPPERMANN, M.A.L. SOUZA. (FO - UFRGS, Porto Alegre, Brazil). pweidlic@portoweb.com.br

The aim of this investigation was to evaluate the topographic pattern of the supragingival plaque formation in the dentogingival region within 96 hours and relate it to the inflammatory alterations occurring in this period. Six male volunteers, 20 to 23 years of age, had their upper incisors and cuspids polished thoroughly. Four independent periods of no mechanical plaque control – 24, 48, 72 and 96 hours – were instituted. In each experimental period plaque was disclosed and standardized individual photographs from four upper incisors were taken. From these pictures the presence/absence of the plaque free zone (PFZ) was registered for the proximal and median thirds of the buccal surface and analyzed with Friedman and Dunn tests. Impressions of these teeth were performed and epoxy resin replicas were analyzed in the scanning electron microscope. Crevicular gingival fluid (CGF) was collected with filter paper strips and disclosed with nihydrine at baseline and 96 hours. The distance from the gingival papilla to the incisal edge of the neighbor tooth was measured in replicas at baseline and 96 hours to the nearest 0,001 mm. Means for the CGF and papilla level were compared with the paired t test. Clinical, photographic and microscopic analysis showed the presence of a PFZ between the gingival margin and the plaque bulk during 24, 48 and 72 hours. After 96 hours, there was a significant reduction in the number of PFZ in the proximal thirds of the buccal surface when compared to the other experimental periods ($p < 0,05$). There was a significant increase in the CGF flow as well as edema of the interdental papilla at the end of the study when compared to baseline values ($p < 0,01$). **It can be concluded that the PFZ observed during the initial phase was less apparent at the 96 hours period. At this time, there was in increase in the gingival inflammatory response, represented clinically by increased CGF flow and edema.**

THE EFFECTS OF TETRACYCLINE LOADED BIODEGRADABLE MEMBRANE IN EXPERIMENTALLY INDUCED PERIODONTITIS OF BEAGLE DOGS.

H.S. JUN[1], Y.J. SEOL[2], Y.J. PARK[2], S.J. LEE[2], I.C. RHYU[1], C.P. CHUNG[1] ([1]Seoul Nat'l Univ., [2]Ewha Women's Univ., Seoul, Korea).

The objective of this study is to evaluate whether Tetracycline can be released steadily above MIC when Tc-loaded biodegradable membrane is used, and whether released Tc can prevent bacterial infection and control inflammation. Test membranes were made by coating meshes of PGA with PLA containing 10% Tc. Released Tc was collected by periopaper 1, 3, 5 and 7 days after GTR therapy. The Tc concentrations were determined by the inhibition zone of *B. cereus* cultured on agar plates. Tc-loaded membranes were used in 3 dogs (12 defects). In the control group (2 dogs), open flap curettage and GTR with Tc-unloaded membranes was done. The Gingival Index and total CFU of anaerobic/aerobic bacteria were monitored at baseline, 1, 2, 4, weeks. All dogs were sacrificed and histological evaluations were done. Tc concentration of experimental group of the first day was $52.5 \pm 14.4 \mu g/ml$. The concentrations were decreased at the 3, 5, 7 days, but steadily released above MIC at $35.0 \pm 13.4 \mu g/ml$, $30.8 \pm 14.6 \mu g/ml$, and $29.2 \pm 13.2 \mu g/ml$ respectively. G1 of the test group was lower than that of the control groups and this trend was maintained for 4 weeks, but this difference was not significant ($p < 0.05$). Total CFU of the anaerobic and aerobic bacteria in the test group was significantly less than that of the control groups ($p > 0.05$). The histologic specimens of the test group showed less inflammatory response and more attachment gain than that of the control groups. **This study suggested that Tc-loaded membrane can prevent infection of membrane and decrease inflammation of the surgical sites in GTR therapy and thereby improve clinical outcomes.**

RISK FACTORS FOR ORAL *CANDIDA* AMONG PATIENTS WITH TYPE 1 DIABETES.

P. MOORE, J. GUGGENHEIMER and T. ORCHARD. (School of Dental Medicine and Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA).

Oral infections by *Candida albicans* have been reported to occur more frequently in patients with Type 1 (insulin-dependent) diabetes mellitus. This study compared the prevalence of clinical *Candidal* infections and the presence of *Candida* pseudohyphae between 405 subjects with Type 1 diabetes (age $33.0 \pm .4$ years) and 268 nondiabetic controls (age $31.8 \pm .5$ years).

Four suspected *Candidal* lesions were more commonly seen in diabetic subjects than control subjects: median rhomboid glossitis (MRG) (7.4% vs 0.4%, $p < 0.0001$), atrophy of tongue papillae (ATP) (8.9% vs 2.2%, $p < 0.0001$), denture stomatitis (DS) (4.7% vs 1.5%, $p < 0.05$) and angular cheilitis (AC) (3.2% vs 1.1%, $p = 0.06$). Diabetic subjects with MRG were more likely to be older males, with longer duration of diabetes, diabetic retinopathy and nephropathy. Diabetic subjects with DS were more likely to smoke cigarettes, wear dentures, and have longer duration of diabetes, elevated glycosylated hemoglobin (≥10.1%) and retinopathy. Diabetic subjects with ATP were more likely to report dry mouth symptoms.

More diabetic subjects than controls were found to have *Candida* pseudohyphae in scrapings obtained from the posterior midline dorsum of the tongue (23.0% vs 5.7%, $p < 0.0001$). Elevated hyphae counts were found in diabetic subjects with MRG, DS and AC; but not with ATP. A logistic regression analysis identified three variables that were significantly associated with the presence of oral *Candida* pseudohyphae: current smoking (odds ratio 2.4); use of dentures (odds ratio 2.3); and elevated glycosylated hemoglobin ≥10.1% (odds ratio 1.9). Use of antibiotic, immunosuppressant or xerostomic drugs had no apparent effect on *Candidal* parameters.

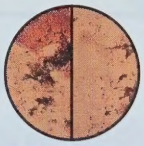
Our results indicate three factors, elevated glycosylated hemoglobin, smoking and the use of dentures, contribute to *Candida* infections in this Type 1 diabetic population.

Supported by NIDR-1-91-R4 & R01-DK34818

INTRODUCING
ORAL CARE SYST
CREATED B
A PERIODONT
NOT
MARKETING DEPARTME

knoll
BASF Pharma

INTRODUCING ORAL PLAN™, a new, complete approach to oral care that was developed by someone whose expertise lies in teeth and gums, not market share. Oral Plan consists of a revolutionary, new dental floss, a patented antibacterial mouth rinse and a low abrasion whitening toothpaste[1]. When used daily, they remove plaque and deliver antimicrobial medication directly to the site where the most damage is done - between teeth and under the gum line.



Before After
Example of Streptococcal Kill Rate*

A FLOSS THAT ALSO ACTS AS A DRUG DELIVERY SYSTEM

Oral Plan Antibacterial Floss is the first dental floss that is specially treated to contain fluoride, cetyl pyridinium chloride (CPC) and triclosan, so it delivers medication directly to the tooth surface at the base of the pocket, where cavities and gum disease start. CPC and triclosan are antibacterial agents that have been shown to inhibit the growth of plaque- and gingivitis-causing bacteria. Flossing with Oral Plan not only removes debris from between teeth, it also removes bacterial plaque that causes gingival disease.

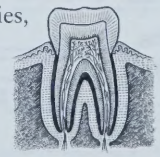
RINSE AWAY BAD BREATH AND HARMFUL BACTERIA

Oral Plan Antibacterial Mouth Rinse also contains a unique combination of CPC, triclosan and fluoride. Its minty fresh formula strengthens tooth enamel and prevents bacterial plaque from forming between brushings. And it doesn't contain ingredients that could stain your patients' teeth.

WHITEN TEETH WITHOUT BLEACH OR PEROXIDE

Your patients may be eager to try some of the new whitening toothpastes. Oral Plan Special Whitening Toothpaste removes plaque and cleans and whitens teeth with very low abrasivity. And it's safe to use on all dental work including porcelain and other restorative materials. So they can clean and whiten their teeth without worrying about damaging the enamel coating.

Oral Plan is a complete oral care program for your patients. With both fluoride and proven antibacterial ingredients, it inhibits growth of bacterial plaque and delivers medication to all sites of the tooth surface - labial, lingual and interproximal - providing exceptional protection against cavities, gingivitis and gum disease. And it was developed by a periodontist, someone who knows what it takes to keep teeth and gums perfectly healthy.



A COMPLETE ORAL CARE SYSTEM DEVELOPED BY A PERIODONTIST.

1. Hefferren John A. A Laboratory Method for Assessment of Dentrifrice Abrasivity. *J Dent Res*, July-August 1976 Vol. 55, No. 4.
Abrasivity data on file and available by calling toll-free 1-877-229-PLAN (7526).
*Graphic representation of before and after example of streptococcal kill rate.

Health for All in the Year 2000

Canadian Public Health Association
91st Annual Conference

Ontario Public Health Association
51st Annual Conference

OTTAWA, ONTARIO
22-25 OCTOBER 2000

For more information:
CPHA Conference Department
400-1565 Carling Avenue
Ottawa, ON, K1Z 8R1
613.725.3769 613.725.9826
conferences@cpha.ca www.cpha.ca

Perio REPORTS

Bimonthly publication designed for dentists and dental hygienists concerned about their patient's periodontal health. Each issue summarizes periodontal research of specific interest to clinicians. Easy to read format keeps you up to date on the latest research findings.

Journals reviewed for **Perio REPORTS** include:
Journal of Periodontology
Journal of Clinical Periodontology
Journal of Periodontal Research
Journal of Dental Research
Periodontal Abstracts
Quintessence International
JADA, JADHA

☐ Please send sample issue for my review

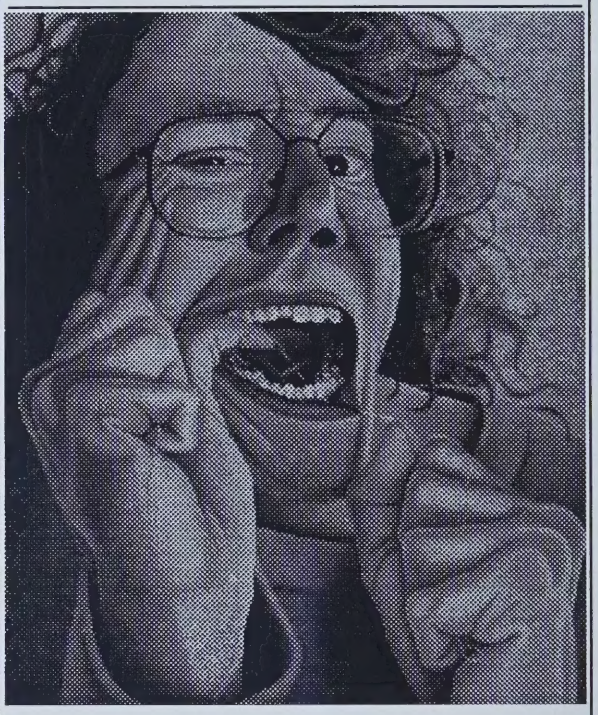
☐ $48 one-year ☐ $84 two-year

Name_____
Address_____
City _____Prov._____Postal Code_____

Mail to:
Perio REPORTS, P.O. Box 52090
311-16th Ave. NE, Calgary, Alberta T2E 8K9

Dental • Auxiliary • Magazine

Published Quarterly • Volume 1, number 1 • ISSN # 1481-7888



SPECIAL INTRODUCTORY OFFER

DAM!, Dental Auxiliary Magazine!, is a new publication of interest to dental professionals. It is published quarterly and is accompanied by a 4 page post-test. This magazine focuses on the functions of dental auxiliaries and the knowledge they require to carry out their appointed tasks. The 36+ page magazine consists of research and articles by a number of dental professionals, as well as abstracts and summaries of recent research and lectures, and related news items. It contains no advertisements and is delivered to your mailing address - no sitters, no travel time, no missed work hours.

Continuing education at your leisure, could it get any easier? Provocative, convenient, informative and affordable - we're continuing to help you commit to personal and professional growth. Act now! **Special introductory pricing in effect until July 31st ONLY.**

DAM! **__1 yr $70.00 __ 2 yr $135.00**
Please add applicable GST or HST.

Mail your name, address, cheques/money-orders, or Visa card number and expiry date, payable to *Melinda M. Ferguson Inc.*, to:

Melinda M. Ferguson Inc.
Box 48808 Bentall
Vancouver, BC V7X 1A6

(604) 683-6604
mmf@istar.ca

Sulcabrush® travel

NEW!

Get a handle on healthy Gums!™

Recommended for patients who have difficulty flossing!

Introductory special *

.75 ¢ each

(144 - Bulk)

*Offer expires May 31, 2000

The ***Sulcabrush®*** *travel* brush - it's a new stick inspired by both the ***Sulcabrush®*** and the ancient chew stick (mswaki).

The ***Sulcabrush®*** *travel* has the same bristle tip as the original ***Sulcabrush®***, without the angles. It's flatter, more compact and half the size, so it fits easily in a purse, briefcase, daytimer or pocket.

Most importantly, it effectively removes plaque between the teeth and stimulates the gums.

Wooden chewsticks have a rich history of usage throughout the Middle-East and Asia, where they are used with and without toothpaste.

The ***Sulcabrush®*** *travel* brush can be personalized.

To place your order, please call ***1 800 387 8777***

Special offer – Order form

Photocopy this page, cut here – place this order form in envelope and mail to the address below.

(Offer expires May 31, 2000)

○ Special **.75¢** each (144 - Bulk) **$108.00** + S&H + Txs.

Please PRINT clearly.

DDS Name

RDH Name (Contact)

Office Address (For Billing)

City

Province

Postal Code

Tel:

Fax:

○ VISA ○ MasterCard Card No.

Exp. Date

Name on Card

Signature

1 800 387 8777

16 Brisbane Road, Downsview
Ontario, Canada M3J 2J8

YIELD

MERGING QUALITY AND SHARPNESS

When you're searching for the highest quality scalers, all signs lead to Hu-Friedy. Hu-Friedy scalers are the sharpest in the business, and they stay sharp longer. In fact, dental professionals use more Hu-Friedy scalers than all other brands combined. So take the high road, and follow the leader.

HU-FRIEDY DENTAL

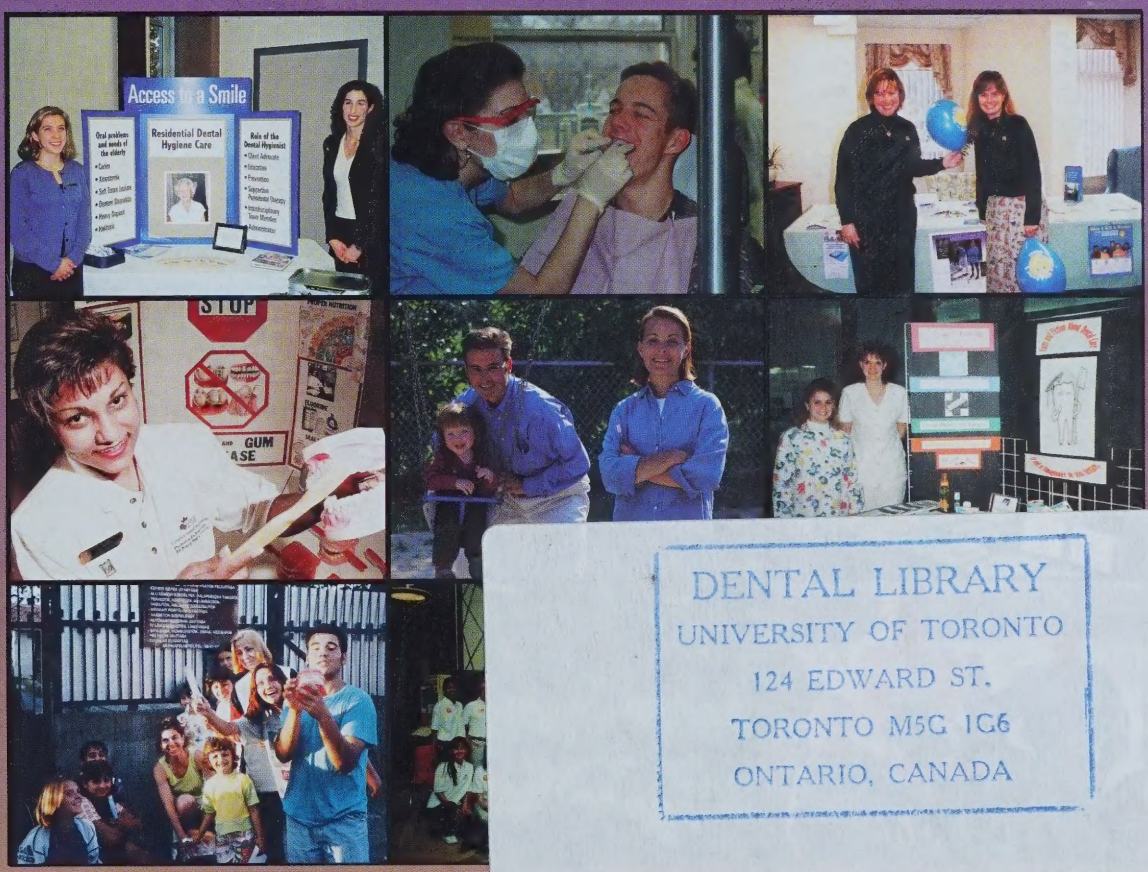
To order, contact your dealer, or call 1-800-HU-FRIEDY

The Canadian Dental Hygienists Association

PROBE JOURNAL

de l'Association canadienne des hygiénistes dentaires

July/August 2000 vol. 34 no. 4



DENTAL LIBRARY
UNIVERSITY OF TORONTO
124 EDWARD ST.
TORONTO M5G 1G6
ONTARIO, CANADA

Empowerment: A Strategic and Facilitative Tool

National Dental Hygiene Certification Examination

Mise à jour sur les dentifrices

OCTOBER 15 TO 21, 2000

CDHA ACHD

National Dental Hygiene Week™

Semaine nationale de l'hygiène dentaire MD

DU 15 AU 21 OCTOBRE 2000

It's all coming this August in a special mailing!

"You mean to tell me you're *not* using Butler PROTECT® Fluoride Foam?"

Great Taste. No Overflow Waste.

New Butler PROTECT® Fluoride Foam is kid-tested and tastes great! With 3 APF flavours (grape, strawberry and lemon-lime) for fast fluoride uptake, and a Neutral mint flavour that prevents dulling or etching of restorations. And for you, PROTECT's unique non-aerosol pump dispenses consistently and accurately without expanding. So, no overflow waste or mess. That'll put a smile on everyone's face.

1-800-265-8353 www.jbutler.com

BUTLER®
Experts in Oral Care

© 1999 John O. Butler Company C99069

Risk Management

Lynda McKeown, Dip.D.H., HBA, MA

"What happened to your wrist and arm?" Lynne asked.

"I fell out of the bathtub," I replied.

"How did that happen?" Lynne questioned.

"I was taking a shower in the hotel preparing for this morning's focus group session. I do not know what I was thinking about, perhaps the news last night on my friend's death. Anyway, the bathtub plug slipped into the drain hole and I tried to retrieve it with my toes. Guess I lost my balance."

"Hmm," said Lynne, "That is a rather foolish move for a non-athletic dental hygienist past middle age."

I muttered, "Yes, guardian angels, past experience in Judo, the shower, or all three saved me from serious injury. All I got was this badly bruised wrist."

"Well," said Lynne, "Risk management is just as important in the bathroom as it is in dental hygiene practice."

We were in London Ontario for the weekend. The National Conference on Infection Control and Occupational Health in Dentistry was hosted by the Canadian Dental Association. This was held in conjunction with the Faculty of Dentistry, University of Western Ontario. I was pleased to attend on behalf of CDHA, although I thought that the topic of infection control might be boring. To my surprise, there were many excellent speakers, obviously enthused about their topics. We heard the latest research regarding; the risk of transmission of viruses, percutaneous injuries, post exposure protocols, latex hypersensitivity, waterborne bacteria, and much more.

A couple of dentist 'attendees' held contradictory positions to the 'accepted standards'. That provided for some lively discussion within the larger audience and some individual reflection for my colleague.

"Imagine working in that practice," Lynne said, "Wouldn't that be a challenge for a dental hygienist to practice according to the College of Dental Hygienists' standards?"

I replied, "A dental hygienist in that kind of setting has to be knowledgeable about blood borne diseases, transmission of viruses, and fairly self confident. She/he has to be prepared to explain intelligently and non-emotionally, '**Why I have to do this!**' to employers and co-workers."

More medically compromised patients/clients appear in our operatories today. Due to new technologies and aggressive treatments we see people with vascular defects, joint replacements, and other replacements. More chemotherapy and other immunocompromised people come for regular 'recare' appointments. Also, clients may be asymptomatic colonized individuals, or in the 'window phase' of incubation.

Know Who and What You are Treating

"The single most important piece of 'protective' equipment," exclaimed Lynne, "is the glove. Herpes Simplex Virus (HSV) of the fingers is an important occupational hazard for dentists and dental hygienists. There are documented cases of primary herpes simplex infection of dentists'/dental hygienists' fingers as a result of treating patients with recurrent herpes lesions on their lips. There are also recorded cases of transmission from the lips of patients/clients to practitioners' fingers. There is no doubt that the use of gloves has stopped the transfer of HSV. Also, gloves protect against hepatitis C."

"Also interesting though," I added, "With the regular use of gloves, health care practitioners have become complacent and thus don't wash their hands. Yet **HAND WASHING** is **THE BASIC** asepsis practice."

As Lynne and I continued our discussion we agreed that there needs to be more continuing education in practice settings about occupational health and safety. Oral health care personnel require information to reduce risk and to increase compliance.

To manage risk, remember:

- Treat all patients/clients as if they are potentially infectious
- Adhere to standard precautions
- Exposure is not synonymous with infection
- Clean it first
- Prevention of sharp accidents is fundamental to reducing exposure risk
- HCW vaccination is more than receipt of HB vaccine. (Need follow-up antibody testing)
- Do not disinfect when you can sterilize.

Effective infection control allows acceptable choices. The public today cares about safety of health care as well as quality of health care. Be proactive.

"Listen up Lynda!" blurted Lynne, "Manage your risk while bathing. Don't play 'twinkle toes' in the shower anymore!"

Kids are patients too!

How To Encourage Your "Patients" To Brush Longer

Colgate* Introduces

New!

Musical Cap Barney™

How it works

- When opened, the musical cap plays a popular Barney™ song for 70 seconds†

Product Benefits

- Motivates kids to brush longer and more often for healthier teeth and gums.
- Encourages children to develop an oral care routine.
- A helpful tool for parents!

Musical Cap Barney™

"Helps Make Brushing Fun!"

Another innovation brought to you by

Colgate*

DEVELOPED IN Colgate CANADA

The 70 seconds of music play time encourages kids to brush for a full 60 seconds, and the extra 10 seconds allows for the time it takes the child to apply the toothpaste to the brush.

Barney™

†2000 Lyons Partnership, L.P. All rights reserved. The Barney name and character, and the overlapping dino spot and Barney and Star logo are trademarks of Lyons Partnership, L.P. Barney, and the Barney and Star logo are Reg. U.S. Pat. & Tm. Off

*TM Reg'd. Colgate-Palmolive Canada Inc.

CONTENTS

Vol. 34 No. 4 – 2000

123 PRESIDENT'S MESSAGE

Risk Management
By Lynda McKeown, Dip.D.H., HBA, MA

126 NEWS

FEATURE ARTICLES

129 Empowerment: A Strategic and Facilitative Tool for the Dental Hygienist
By Ruth Shearer, RN MS MSN, and Ruth Davidhizar, RN DNS CS FAAN

132 Development of the National Dental Hygiene Certification Examination (NDHCE)
By Diane Landry, Dip.D.H., Dip.D.T., B.A., B.V.T.Ed.

136 Mise à jour sur les dentifrices
par Christine Thibault, H.D., B.Sc.

142 NEW PRODUCTS

145 ABSTRACT

Use of a Biodegradable Chlorhexidine Chip in the Treatment of Adult Periodontitis: Clinical and Radiographic Findings
Reviewed by Carol Barr Overholt, Dip.D.H., B.Ed., Contributing Editor

DENTAL ABSTRACTS

146 Incorporating Risk Assessment Into Periodontal Treatment Planning

147 Chronic Nonspecific Mucosal Lesions Tricky to Diagnose and Treat

148 OralCDx Analysis of Brush Biopsy Can Detect Oral Cancer Early, Indicate Need for Scalpel Biopsy

149 Clinical Practice Guidelines for Sjögren's Syndrome

INFORMATION

150 Assessment for Considerations Regarding Fluoride Supplementation

Dental Waterlines — The Straight Facts an Online Web-based Course

151 Information Web Directory for Caregivers

Herbs — Everyday Reference for Health Professionals

152 Trigeminal Neuralgia in Dentistry

New BC Study on Home Care

153 Photodynamic Therapy

156 Probing the Net

158 Classifieds

Advertisers' Index

Probe Advertising Rates

Oral-B® The Brand More Dental Hygienists Use Themselves.

MANAGER, COMMUNICATIONS SERVICES: Angela J. Whelan, B.A.
EXECUTIVE DIRECTOR: C. Matheson Worobey, Dip.D.H.
EDITORIAL ADVISOR: K. Edwards, M.A.
CONTRIBUTORS
Leanne Carlson-Mann, Dip.D.H., Dip.D.T.
Carol Barr Overholt, Dip.D.H., B.Ed.
Karen Wolf, Dip.D.H.
EDITORIAL BOARD
B. Fortune, Dip.D.H.
R. Lunn, Dip.D.H.
L. MacDonald, Dip.D.H., B.Sc.D., M.Ed.
J. Waites, Dip.D.H.
DESIGN: Edels-Marcotte
Published six times a year, Jan./Feb., Mar./Apr., May/June (Scientific Issue), July/Aug., Sept./Oct., Nov./Dec. (Scientific Issue), by the Canadian Dental Hygienists Association,
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Tel (613) 224–5515

Canada Post Publications Mail Registration No. 09877
CANADIAN POSTMASTER: Notice of change of address and undeliverables should be sent to:
Canadian Dental Hygienists Association
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Subscriptions $75.00 (GST Included) in Canada, $125.00 Cdn for US and $130.00 Cdn elsewhere. Fifty cents per issue is allocated from membership fees for journal production. All statements are those of the authors and do not necessarily represent the CDHA, its Board, or its staff.
ADVERTISING AND SUBSCRIPTIONS:
Keith Health Care Inc.
10 Front Street South
Mississauga, ON L5H 2C4
(905) 278–6700
CDHA 2000
6176 CN ISSN 0 834–1494
GST Registration No. R106845233

CDHA CENTRAL OFFICE STAFF
Executive Director: Carol Matheson Worobey
Manager, Communications Services: Angela J. Whelan
Manager, Finance and Administration: Monique Belleau Rock
Manager, Member Services: Sandra VanWart
Member Services Assistant: Louise Lalonde
Administrative/Executive Assistant: Shelly Minnie
Receptionist/Information Clerk: Francine Fortin
All CDHA members are invited to call the CDHA's Member Line toll-free, with their questions/inquiries:
1–800–267–5235, Fax (613) 224–7283
Internet: http://www.cdha.ca E-mail: info@cdha.ca
We look forward to serving you.

The Canadian Dental Hygienists Association's Journal, *Probe*, is the official publication of the CDHA. The CDHA invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to *Probe* do not necessarily represent the views of the CDHA, nor can the CDHA guarantee the authenticity of the reported research. Copyright 1999. All materials subject to this copyright may be photocopied for the non-commercial purpose of scientific or educational advancement.

Member Recognition

TRUDI MONDROW

Trudi Mondrow from Thornhill, Ontario, has graduated on the dean's honour roll from York University in June, with a degree in psychology and religious studies.

Trudi graduated from the University of Toronto Dental Hygiene program in 1955. She has practised dental hygiene in public health, academia, and private practice. She was a founding member of the Ontario Dental Hygienists Association (ODHA) and is still in private practice on a part-time basis.

Class of '69

Back Row: Debra Johnstone (Nanaimo, BC), Peggy Guest (Penticton, BC), Nina Mussellam (Powell River, BC), Susan Scovill (Lethbridge, AB), Susan Monument (Calgary, AB).

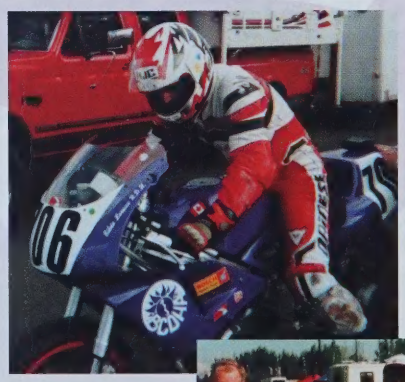
Front Row: Joan Brich (Switzerland), Sherry Saunderson (Cobble Hill, BC), Del Pollard (Grand Prairie, AB), Sherry Tully (Roberts Creek, BC), Bev Nieman (Spruce Grove, AB - and now an accountant), Jean Allen (North Vancouver, BC), and Joan Connelly (Kelowna, BC).

When 21 dental hygienists graduated from the University of Alberta in June of 1969, they were told they likely would stay in their careers for only 3 or 4 years! Thirty years later, only two members have recently retired. On July 12, 1999, the 20 members of the Class of '69 met in Whistler, BC and spent three days celebrating their profession and renewing old friendships. They honored the memories of classmate Barb Zier, and their clinical instructor Darlene Thomas, who are no longer with them.

At the time of enrolling, in 1967, there were only four Schools of Dental Hygiene in Canada. Two classmates now live in California and Utah.

Silvio Lorusso, RDH

Silvio is a CDHA/BCDHA member and racing enthusiast. In 1999, Silvio received sponsorship from BCDHA to paint his motorcycle "Hygiene Aubergine", and race in the Seattle Endurance Race where he placed third. Silvio promotes the dental hygiene profession with his motorcycle events, races and displays. Silvio is a graduate of the dental hygiene program from Canadore College (1992), from the dental technology program at George Brown (1986), and he currently practices dental hygiene in private practice in the British Columbia lower mainland.



Silvio Lorusso and his hygiene aubergine motorcycle promote and raise awareness of dental hygiene through races and displays with continued support from Fraser Valley Dental Hygienists Society.

Way to go Silvio!

College of Dental Hygienists of British Columbia Announces Election of Board Chair and Vice-Chair

Yvonne Smith, Chair, CDHBC

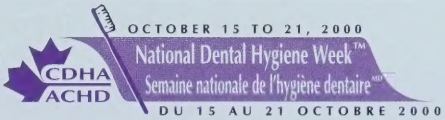
On March 25, 2000, the Board of the College of Dental Hygienists of British Columbia elected Yvonne Smith and Susan Burak as Chair and Vice-chair, respectively, for the 2000/01 term. The term of office of the former Chair, Carol Kline, ended on March 1, 2000.

Yvonne Smith is a graduate of the University of Manitoba in dental hygiene and the University of Victoria in Arts. Yvonne has represented the Vancouver Island/Coast region on the Board since 1996, and is a member of the College's Quality Assurance Committee. She has been a full time dental hygiene practitioner for 27 years, and is currently in clinical practice in Lillooet and in community health practice in Squamish.

Susan Burak, Vice-Chair, CDHBC

Susan Burak is a graduate of the University of British Columbia in dental hygiene and in law. Susan has represented the Lower Mainland region on the Board since 1999, and is a member of the College's Inquiry Committee. This is Susan's second term as Vice-Chair. She is both a practising dental hygienist and a practising lawyer.

National Dental Hygiene Week™



Activities in Red Deer, Alberta

Red Deer Community Health Center activities included:

- Articles printed in the urban and rural newspapers promoting the profession and xerostomia among seniors.
- Public Health Dental Hygienists promoted NDHW™ within the Community Health Center, featuring a promotional display.
- Community Health Center staff had a chance to try their dental knowledge at the Dental Tri-Bond game. Toothbrush give-aways and draw prizes wrapped up the exciting week. We plan on making this an annual event.
- Butler kindly donated a Pulse brush that was awarded to one lucky senior during Flu immunization, which was held during NDHW™.

NDHW™

This year National Dental Hygiene Week ™ will be held from October 15th to October 21st, 2000. A special mailing to kick off this year's NDHW will be issued to all members in August.

Membership News

Watch For!

Your **MEMBERSHIP RENEWAL APPLICATION**. It will be mailed at the end of August. **Deadline for renewal is October 31st.**

Reminder!!!

Four provinces, Alberta, British Columbia, Ontario and Saskatchewan require proof of Malpractice Insurance as a prerequisite to license.

In order to provide ample time for CDHA to process your payment and send out your Membership Cards and Insurance Policies, please renew your membership at your earliest convenience.

Nova Scotia and Newfoundland

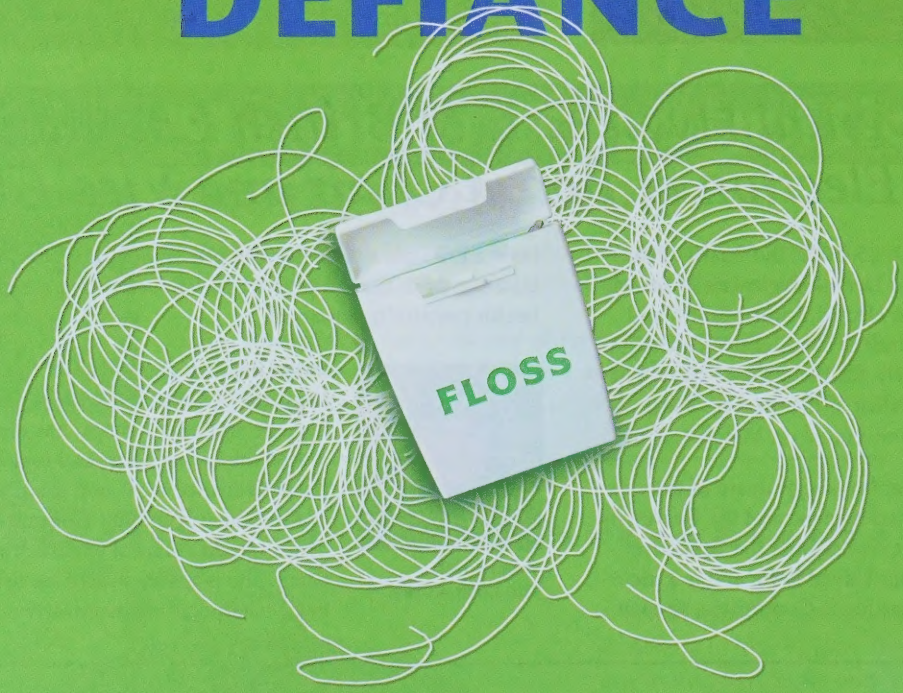
Proof of Membership is a prerequisite to license in both these provinces. Please remember to join your Association at your earliest convenience by returning your membership renewal to CDHA .

That both the Malpractice Insurance ($2,000,000 coverage/year) and the Disciplinary/Sexual Abuse Defence Costs Insurance ($10,000 /year) are Benefits of Active membership.

Have you moved?

Please remember to inform CDHA of your address change to ensure that there will be no disruption in delivery of *Probe*.

DEFIANCE



COMPLIANCE

Having trouble getting your patients to floss?

With the the new Water Pik Flosser™, it's automatic. They can forget old-fashioned dental floss. Because the Water Pik Flosser ™ is not only easier, quicker, and more convenient, it's **clinically proven to be as effective as manual flossing** - without producing soft tissue damage. Though it's gentle, its single nylon filament is so strong it won't break off between teeth, and its up-and-down action at 10,000 gentle strokes a minute ensures thorough, one-handed cleaning. Plus, the Water Pik Flosser™ is portable, so patients can practice sound oral hygiene even on the road. Perhaps best of all, it's from Waterpik Technologies, the company you trust for the best in oral health innovation.

Water Pik Flosser™
FLOSSING WITHOUT FLOSS

www.waterpik.com

See us at ODA for a demonstration and an exciting introductory offer.

Empowerment: A Strategic and Facilitative Tool for the Dental Hygienist

By Ruth Shearer, RN MS MSN, Assistant Professor of Psychiatric Mental/Health Nursing, Bethel College, Mishawaka, Indiana, 46526 and Ruth Davidhizar, RN DNS CS FAAN, Professor and Dean of Nursing, Bethel College, Mishawaka, Indiana, 46526

Empowerment can be defined many ways.

Empowerment, according to Webster's New World Dictionary (1991) is "The process of enabling oneself to use one's power or of giving ability of power to another." Swansburg and Swansburg (1999) propose health care professionals are "empowered when administrators and managers share authority with them and when initiatives are rewarded." Empowerment positively influences change. Change and power have a positive interactive influence. When change is successfully implemented, it empowers people since the results of efforts can be visibly demonstrated. If change is not successfully implemented, it dissipates empowerment. When individuals are empowered, change is more likely to occur, whereas change is less likely to occur without empowerment. This paper focuses on empowerment and the important role feelings of power can serve in the practice as a dental hygienist and the enhancement of the profession.

Sources of Empowerment

Empowerment may come from external and internal forces. For example, it can be externally motivated in the dental office through positive relationships with other persons such as the dentist, other staff, or patients. Empowerment can come as a result of receiving a promotion, getting a raise, or winning an award for accomplishing a difficult task that results in praise from others. Successfully directing the move of the dental office from one facility to another and being the only person to understand the new computer system are accomplishments that can enhance the personal empowerment of the dental hygienist.

When empowerment is internally induced, it is closely related to self-concept or self-image. It may come from self-examination or the self-confidence that comes from accomplishing a personal goal. It is facilitated by receiving positive feedback from significant others for accomplishments and from receiving unconditional love from caregivers throughout infancy and childhood. As an adult, it may be facilitated by attending an empowerment workshop or reading a captivating book on empowerment (Davidhizar and Vance, 1995).

Dental hygienists are empowered in their role of providing direct client care. This direct contribution to the benefit of society has empowered the profession and allowed the role of dental hygienists to gain stature.

While empowerment is a trendy new term that modern professionals say they are seeking, it is not simply a selfish desire for power promoted by disgruntled individuals or those who want to be using the latest terminology. Quite the opposite is true. Empowerment is achieved best by dynamic, charismatic, and far-sighted individuals with a vision. In a dental office, the process of achieving empowerment can be inspiring because it involves "building, developing and increasing power through cooperating, sharing, and working together." (Rothstein, 1995).

Empowerment is therapeutic and spiritual; it is healthy for individuals, organizations, and professions (Hammerman, 1988). Empowerment is extended by technology and the ability of individuals to use technology. In this way, professionals are empowered by computers with modems, cellular phones, FAX machines, and access to E-mail (Naisbitt & Aburdene, 1990).

Power vs. Empowerment

Power is defined as a combination of authority and influence derived from a variety of sources including position, expertise, and personal qualities (Prescott & Dennis, 1995). Empowerment occurs when feelings of power are internalized or facilitated in someone else. Feelings of power are basic and essential for optimal success in practice in a professional setting. In fact, for the dental hygienist, feelings of power are a tool which results in both personal growth,

positive attitudes for self and others, and empowerment of patients. Dental hygienists are empowered by a strong base of knowledge which allows interprofessional dialogue. Dental hygienists provide expertise with nursing, physiotherapy and in dental practices by sharing and discussing research abstracts, articles, etc. Dental hygienists contribute to problem solving through evidenced based practice.

The lack of feeling of power leads to insecurity and emotional distress and can hinder the effective relationships in the dental office. When the dental hygienist does not feel empowered, an opportunity to facilitate patient health, self-care, and empowerment is often lost.

Feelings of power do not automatically come with being born or with a diploma or graduation certificate. The ability to feel personal power and to use one's power is often developed over time and, for some, with much effort.

The ability to feel power and to empower others may be derived from referent power. By definition referent power is the ability to influence others. Referent power accompanies certain personality characteristics. For example, personal charm and enthusiasm can empower an individual to have influence over others. Such things as having good manners, being empathetic with a focused manner, having good listening skills, exhibiting charisma and enthusiasm can enhance a dental hygienist's personal feelings of power and subsequently the ability to empower patients and staff.

Power can be gained when one gains knowledge and competency. Self-confidence is often developed when one becomes an expert with specific education and experience. When combined with effective interpersonal skills, expertise gained from professional education can elicit respect from others. On the other hand, education alone does not empower. An individual who lacks appropriate interpersonal skills may be educated but fail to have power in a professional setting.

Power may be facilitated by the acquisition of a degree and subsequent position of authority. Thus, a dental hygienist may gain power by putting on professional dental office attire with a name pin listing title, and having a large diploma on the wall for patients to see. Patients may respond to professional garb and to being in the presence of an educated person by the assumption that the professional is powerful. In this case, the way a dental hygienist is treated by patients because of position and the artifacts of position may contribute to power.

Empowering Yourself

To empower others, it is first necessary to have personal feelings of power. Empowered individuals have a positive self-concept. Personal needs to feel important and to feel useful are met. When at work the empowered individual feels part of a worthwhile enterprise and experiences positive accomplishments.

The personal management of self is critical to feeling empowered. Personal empowerment means having self-awareness, comfort with self, and the self-confidence.

For an insecure and dependent individual, feelings of empowerment may involve a radical departure from past behaviors. In the dental office it may be facilitated by structure and clear delineation of responsibility. Structure enables people to handle the uncertainty they may feel as they try out new behaviors. Structure is created by establishing clear boundaries concerning what employees in the office should or should not do. There needs to be clear limits on each person's responsibilities. The boundaries are reaffirmed when individuals are affirmed and supported for doing their assignment well (Rothstein, 1995). For example, the dental hygienist may be given the assignment and role of patient educator. After trying new teaching methods that result in successful teaching, the dental hygienist is affirmed by the patient and dentist which increases the dental hygienist's self-confidence.

Feelings of empowerment also require a certain mindset. To feel empowered, productive thinking needs to be present. There must be the feelings of personal control over personal perceptions. Empowered individuals know they have the power to feel personally empowered and that these feelings are not dependent on external forces. While external forces can reaffirm and expedite feelings of power, true empowerment comes from within.

The empowered individual must also set realistic expectations. Having realistic, rather than unrealistic or unattainable expectations, helps to eliminate the disappointment of not being able to reach goals. Realistic expectations also help the individual to think productively. Personal empowerment gives the power to change situations and the way situations are perceived.

The empowered dental hygienist has a sense of perspective about the job, for example, to find the humor in an incongruous situation. The empowered dental hygienist may even look for situations that represent personal comedy in order to bring humor and a feeling of fun into the workplace.

Empowerment also requires an adequate level of trust in self. It involves letting go of guilt and feelings of "not doing enough". It means staying calm in a crisis and maintaining positive self-esteem and self-image when things are going badly. Personal commitment to a job and taking responsibility for doing things well promotes empowerment.

Lastly, the person with feelings of personal power needs to practice positive self-care. Personal goals and needs, need to be met in order to feel empowered and consequently to empower others. Self-care involves factors such as having adequate rest and breaks in the day, taking time out for fun and to look at things with humor, and looking out for oneself personally. Self-care may involve saying "no" to offers to work overtime. It involves taking time for introspection and quiet thought.

Empowering Others

To be most effective in a dental clinic, the dental hygienist needs both feelings of empowerment and the skills to

empower others. To facilitate effective self-care in patients a style that nurtures others to develop themselves is crucial. Mantz and Sims (1989) call this style "super leadership" or the ability to lead others to lead themselves. Professionals have the responsibility to bring out the best in those they serve (Gunden and Crissman, 1992). When a patient is empowered to take self-directed actions for self care this represents a high level of patient care.

A dental hygienist can facilitate self-care by providing the patient with the knowledge needed to improve their oral hygiene. Adherence to self-care recommendations may also result from an understanding that self-care has made a difference in the dental work required in this, and subsequent visits, to the dental office. Positive recognition and praise for self care are a powerful motivator and can enhance adherence to a self care plan in the future.

In addition to empowering patients, the dental hygienist who has feelings of empowerment can be significant to others on the dental team. Creating a climate in the work place that allows the professional work team to develop and mature is both challenging and rewarding. Effective managing and involving of other staff during a period of reorganization, for example, movement to a new office setting, can also lead to feelings of empowerment for other persons on the dental team. Recognition of the contributions of others, providing support to others on the team, and being available when other team members need someone to listen to can be both empowering to the dental hygienist but also to the staff who are recognized and supported.

Verbal techniques are also effective in supporting and empowering team mates. Comments of praise such as, "You really looked good in there," "I know you know about this kind of thing and have been doing it already," "With your experience in this area you already know," or "I really appreciated your help with…" Gifts of thanks, such as fresh flowers for the secretary can lead to feelings of self-respect and empowerment.

A dental hygienist may empower a dentist by personal manner and communicating respect. Verbal techniques such as "How would you like this done?", "I really appreciate working for someone who is as considerate as you are," and "When you praise a patient I can really see how that positively affects them" are ways a dental hygienist can communicate respect and facilitate feelings of empowerment in the employer.

Maintaining Empowerment

The empowered dental hygienist is not necessarily the one who works longest or hardest in the dental office. Care must also be taken to meet personal needs in order to perform optimally on the job. The dental hygienist who puts in too many hours working and is exhausted will not have the strength to facilitate empowerment. Stress management techniques should be used to reduce tension, pain, fatigue, and burnout. Other staff and patients should be treated with both sensitivity and yet not smothered. Giving should be a nourishing experience rather than a depleting one. The empowered dental hygienist needs a network of social support and the ability to draw persons in the network to handle stress on the job as well as personal stress. Self nurture involves using strategies that supports self-esteem. These strategies can include positive thought, such as, "I've done this many times before and it has always gone well. This will go well too." Self nurturing thoughts can also involve celebrating accomplishments, trying new things, and learning more about self.

Setting limits on one's level of responsibility can also facilitate the maintenance of a sense of empowerment. Novice professionals often find themselves feeling responsible for everything. Once responsibilities are clearly delineated and understood then the amount of work expected to meet these responsibilities can be clearly identified. The philosophy, "How important will my doing this work right now be five years from now?" can assist in keeping things in perspective.

Summary

Feelings of personal power are important for personal feelings of well-being as well as effectiveness on the job. An important dimension of personal power is the ability to feel empowered and to empower others. Careful assessment of position power, expertise power, and personal characteristics which add or detract from personal power can increase self awareness and cause strong areas to be maximized and weak areas to be developed. Each individual has power that may be both recognized and not recognized. When the dental hygienist takes care to evaluate feelings of personal empowerment, feelings of empowerment among other staff and feelings of empowerment of patients, deficiencies can be identified. When the dental hygienist plans and utilizes techniques that foster and promote feelings of empowerment, this can enhance personal growth, positive attitudes among self and staff, and can empower the patient personally to adhere to a dental plan of self care.

References

1. Davidhizar, R. & Vance, A. (1995, March). Empowerment defined: a management tool for self and staff resulting in positive attitude. *Advance for Administrators in Radiology*, 49–52.
2. Gunden, E. & Crissman, S. (1992). *Nursing Administration Quarterly*, 16 (3), 6–10.
3. Hammerman, M. (1988). Adult learning in self-help mutual/Aid support groups. *Lifelong Learning: An Omnibus of Practice and Research*, 12 (1), 25–27.
4. Manz, D. & Sims, H. (1989). Super Leadership, New York, N.Y. Prentice Hall.
5. Naisbitt, J. & Aburdene, P. (1990) *Megatrends 2000*. New York: William Morrow and Co. 16.
6. Prescott, P. & Dennis, K. (1985, Nov-Dec). Power and powerlessness in hospital nursing departments. *The Journal of Professional Nursing*, 348–355.
7. Rothstein, L. (1995). The empowerment effort that came undone. *Harvard Business Review*, 20–26.
8. Swansburg, R. & Swansburg, R. (1999). *Introductory Management and Leadership for Nurses*. Johnson and Bartlett Publishers: Sudbury, MA.
9. *Webster's New World Dictionary* (1991). Prentice Hall General Reference: New York.

Development of the National Dental Hygiene Certification Examination (NDHCE)

By Diane Landry, Dip.D.H., Dip.D.T., B.A., B.V.T.Ed.

Past issues of *Probe* have featured samples of questions that appear on the National Dental Hygiene Certification Examination (Examination). The following is an explanation of the Examination development process; it highlights the steps followed and outlines the item (question) writing process. To ensure that the Examination would achieve its stated purpose; to protect the public by ensuring that those who are certified possess sufficient knowledge and skills to perform important occupational activities safely and effectively, a rigorous test development process was implemented. The Examination development process, summarized below, met or exceeded all professional standards as specified by the Guidelines for Educational and Psychological Testing (Canadian Psychological Association, 1987).

The Examination Development Process

The Examination tests the candidate's ability to apply his/her knowledge as a beginning practitioner to solve oral health care problems and answer questions related to dental hygiene practice. The content of the Examination is based on dental hygiene competencies. These competencies were developed by the National Dental Hygiene Certification Board (NDHCB) using the following as resources:

- the Canadian Dental Hygienists Association's National Practice Standards document, published in 1988 and revised in 1995
- the Commission on Dental Accreditation of Canada Standards for dental hygiene education; and
- current Canadian dental hygiene curricula.

The competencies were extensively reviewed by focus groups of dental hygiene subject matter experts from across Canada (educators, clinical and community health practitioners, administrators, and researchers) to establish their validity. Dental hygiene regulatory authorities were consulted to ensure that the competencies reflected dental hygiene practice in all jurisdictions.

1. EXAMINATION COMMITTEE

The first step in the examination development process was to establish an Examination Committee. The Examination Committee's primary responsibility is to oversee and participate in all preparation and evaluation activities related to the Examination development. The NDHCB's Examination Committee, struck in 1995, is comprised of seven (7) subject matter experts with representation across regions and practice responsibilities.

2. COMPETENCY STUDY

One of the first tasks of the Examination Committee was to develop a competency profile for the entry-level, Canadian, dental hygienist. A competency can be defined as the knowledge, skill, ability, attitudes and judgment required to perform the required scope of practice safely and effectively. A good competency profile is both valid and comprehensive.

A comprehensive competency profile is one that contains all the competencies required and none that are unnecessary. A set of competencies, once validated, can be used for many different purposes, including curriculum development, job definition, examination development, and performance appraisal. Valid competencies are ones that actually define the actions that apply to an entry-level Canadian dental hygienist.

The NDHCB competency profile forms the foundation for the content validity of the National Dental Hygiene Certification Examination. The Examination is a criterion-referenced examination. This format allows for alternate forms of the Examination that are very similar, yet standardized. The questions on each form of the Examination vary, but the competencies are always the same and listed in a blueprint. The Examination competencies reflect national practice and education standards; current dental hygiene practice; situations which represent the various age groups and health problems; and are appropriate for the entry-level practitioner. The Examination competencies are currently categorized according to the Dental Hygiene Process: assessment, planning, implementation and evaluation, which is the foundation of professional dental hygiene practice and provides a model for organizing and providing dental hygiene services in a variety of settings.

3. BLUEPRINT DEVELOPMENT

A Blueprint that ensures that the Examination accurately reflects the domain of entry-level dental hygiene was then developed by the Examination Committee. The Blueprint includes all of the competency statements, specifies the variables that provide structure and context for the Examination and sets guidelines for weighting the competencies.

Structural variables included are:

- **Length and Format**
  The examination consists of between 200–250 objective items (multiple choice).
- **Item Presentation**
  Objective items are presented in one of two formats, case-based or independent items.

- **Taxonomy for Items**
  To ensure that competencies are measured at different levels of cognitive ability, each item on the Examination is classified into one of three levels:
  1) Knowledge/Comprehension;
  2) Application; and
  3) Critical Thinking. (See Table 1).

Contextual variables included are:

- **Client Age and Gender**
  Providing specifications for use of these variables ensures that the clients described in the Examination represent the demographic characteristics of the population encountered by the dental hygienist. (See Table 2).
- **Client Culture**
  The Examination is designed to include items representing the variety of cultural backgrounds encountered while providing dental hygiene care in Canada.
- **Health Care Environment**
  Since dental hygiene care can be practised in a variety of settings and most competencies are not setting dependent, the heath care environment is only specified where required.

Competency Groups and Weighting

To ensure that the Examination accurately reflects the profile of dental hygiene practice, the competencies are grouped into four equal size groups (1-A, 2-A, 1-B, 2-B) according to their relative importance and frequency of performance. These groups (see Table 3 for their distribution) were used to establish the relative weights that the competencies will receive in the Examination. For example, the competencies that are listed in Group 1-A are considered very/extremely important and occur very frequently in dental hygiene practice. These competencies include those that have the potential to cause high or moderate harm to the client if they were omitted or not performed correctly. The competencies listed in Group 1-A form 40–50 % of the Examination questions and therefore are tested more frequently than a competency that is categorized as Group 2-B (less important/ less frequent).

Assumptions

Included in the Blueprint is a list of assumptions that underlie and support the competency statements. They are phrased as general statements about dental hygienists, their clients, their practice environments and oral health. The assumptions are taken as "givens" that are always relevant regardless of which specific competency is being considered. For example, one assumption is that the dental hygienist is an entry level practitioner who practices with a base of knowledge, evidence and theory of dental hygiene practice. Another example is that the client can be described as an individual, family or group with unique needs, motivations, health status and who is seeking cost effective dental hygiene services. Descriptions for practice environments and oral health are also included in the Blueprint.

Competency Profile Review

As part of the normal cycle of periodic review, the NDHCB is currently conducting a comprehensive review and revision of the original competency profile. Such reviews are necessary to ensure that certification for dental hygienists continues to maintain the same high standards over time. The competency statements are expected to reflect dental hygiene practice for a 5 year period. The revised edition of the Examination Blueprint will become effective for the Spring 2001 Examination.

4. ITEM DEVELOPMENT

Examination items are developed by groups of subject matter experts who are trained in item writing. The Examination items measure the specified competencies in accordance with the guidelines identified in the Examination Blueprint. After an item is developed, it is evaluated and refined by the group of subject matter experts and entered into a bank for future retrieval.

5. PROFESSIONAL EDITING

All items then undergo a review by a professional editor to ensure clarity, consistency and appropriateness of the language used.

6. REGIONAL REVIEW

Groups of subject matter experts representing all regions and practice environments across Canada, also review the items to ensure that they measure content that is consistent with current regional standards of practice for beginning practitioners.

7. TEST FAIRNESS REVIEW

Representatives from minority groups (e.g., aboriginals, visible minorities, individuals with disabilities) review the items to ensure that stereotypes are not found and that candidates are not disadvantaged by the Examination content.

8. MONITORING

Each version of the Examination is compiled from items in the test bank in accordance with the Blueprint specifications. Prior to granting approval, the Examination Committee completes a review of the complete Examination to ensure that each item measures content that is consistent with the current standards of practice for the beginning practitioner.

9. STANDARD SETTING

The passing score for the Examination sets a standard of performance on which decisions will be made about a candidate's level of competence. The standard for the Examination is set using the professionally accepted and widely used, modified Angoff Method. The Angoff Method is based on the concept of the "borderline " or minimally competent candidate. The minimally competent candidate is one who possesses the minimum level of knowledge and skills necessary to perform at certification level. The candidate performs at a level "on the borderline" between acceptable and unacceptable performance. The advantage of this methodology is that the passing score is set based on the items in the Examination and not on group performance. This is desirable because the acceptable performance is set by content experts rather than the performance of a particular group.

Under the guidance of expert test consultants, the Examination Committee establishes a score that represents the expected performance of an entry level practice dental hygienist at the level of minimal competence. In addition to the expert ratings of the Examination Committee members, a variety of statistical data is considered to ensure that the standard that the candidate is expected to achieve on the Examination is fair and valid.

10. TRANSLATION

The Examinations are translated by accredited professional translators, reviewed by bilingual test consultants and further validated by a five-member focus group comprised of bilingual dental hygienists from provinces with Francophone

candidates. A lexicon has also been developed and distributed to all Francophone dental hygiene programs.

Item Writing Activities

All of the items (questions) on the Examination follow the multiple choice format. Multiple choice items allow for greater coverage of content which improves both validity and reliability. This type of item is able to measure both basic knowledge and higher order cognitive skills such as prediction, evaluation, problem solving and critical thinking. The multiple choice format lends itself to the presentation of realistic and practical situations from which applied and analytical items can be developed. Finally, multiple choice questions allow for ease of scoring and a quick turn around time for distribution of results.

The Examination format includes two types of items, independent and case studies. Independent items are stand-alone items which are not specifically connected with any other text or items. Case studies have a brief introductory text accompanied by approximately five related items.

All items have two parts, the stem and the options. The stem is the introductory part of the item which presents the candidate with a question or problem. The options are the alternatives (e.g., words, statements, numbers) from which the candidate is to select the correct or best answer to the question or problem posed in the stem. Each item has four options: The correct response, which represents the correct or best answer; and three distractors, which are plausible but incorrect (or less adequate) options intended to distract the candidate who is uncertain of the correct response.

The development of the items for the Examination involves a significant amount of time and effort. The NDHCB has invited dental hygiene educators from Canadian dental hygiene programs to participate in item writing workshops. A typical workshop consists of five item writers who meet for five days to write items for each of the competency statements listed in the Examination Blueprint. The item writing workshop is facilitated by an expert test consultant. The item writers are given an orientation to writing quality items that will meet accepted principles of psychometric testing. The following is an outline of the steps followed at an item writing workshop.

1. EXAMINE THE COMPETENCY

The item writers examine the parameters listed on the competency card (e.g., age, gender, level of cognitive ability/taxonomy), before writing an item that will reflect the competency and the identified parameters.

2. CREATE THE STEM

The stem must be presented as a clear, concise, complete sentence. As much of the wording as possible should be put in the stem, rather than in the options. It should provide all of the necessary information to enable the candidates to select an option and be stated in a positive form.

3. WRITE THE CORRECT RESPONSE

The response provided should be one that experts are likely to agree on as the best of the options provided. The correct response should not be contradicted by other reference sources.

4. DEVELOP RATIONALES

One current reference text (published within the past 5 years) is cited to identify the correct response. The writers ensure that the rationale indicates why an option is correct or incorrect. The explanation does not need to be exhaustive.

5. FORMULATE THE DISTRACTORS

The writers ensure that all of the distractors are plausible and homogeneous (e.g., if the stem asks for a dental hygiene intervention, ensure that each option is presented as a dental hygiene intervention).

6. REVIEW ITEMS WITH THE GROUP

The purpose of this activity is to verify the quality and accuracy of the items that are developed. Each item is presented to the item-writing group for comments and suggestions. When the group has agreed that an item meets the guidelines for examination items, the item is approved and stored in the bank.

Item Format

The Examination items test three levels of cognitive ability:

1. KNOWLEDGE/COMPREHENSION

This level refers to the ability to recall previously learned material and to understand its meaning. It includes such cognitive abilities as knowing and understanding definitions, facts, and principles, and interpreting data (e.g., knowing the effects of certain drugs, interpreting data appearing on a client's chart).

Example:
Competency statement: implements dental hygiene interventions using the principles of instrumentation.

Which one of the following terms refers to the relationship between the instrument's blade and the tooth surface?

1. Stabilization
2. Angulation
3. Lateral pressure
4. ☞ Adaptation

The candidate would be required to recall that adaptation refers to the manner in which the blade contacts the tooth surface.

2. APPLICATION

This level refers to the ability to apply knowledge and learning to new or practical situations. It includes applying rules, methods, principles, and dental hygiene theories in providing care to clients (e.g., applying principles of therapeutic communication).

Example:
Competency statement: implements dental hygiene interventions using the principles of instrumentation.

A dental hygienist is having difficulty removing a nodular deposit of subgingival calculus on the labial aspect of a mandibular incisor near the midline of the root. The dental hygienist is using a curet. Which of the following techniques would be helpful in removing the deposit?

1. Apply a long, controlled vertical stroke
2. Apply a short, controlled oblique stroke
3. Apply a long, controlled push stroke
4. ☞ Apply a short, controlled horizontal stroke

Because mandibular incisors have roots that are very narrow on the facial aspect, it is often effective to insert the blade with the cutting edges parallel to the long axis of the root and initiate a horizontal stroke. The candidate would have to apply knowledge of dental anatomy and rules of instrumentation.

3. CRITICAL THINKING

This level deals with higher-level thinking processes. It includes the ability to judge the relevance of data, to deal with abstractions, and to solve problems (e.g., identifying priorities of care, evaluating the effectiveness of dental hygiene interventions). The dental hygienist should be able to identify cause-and-effect relationships, distinguish between relevant and irrelevant data, formulate valid conclusions, and make judgments concerning the needs of clients.

Example:

Competency statement: implements dental hygiene interventions using the principles of instrumentation.

Which of the following instruments would be most useful for smoothing down an amalgam restoration with an overextension in the region of the cementoenamel junction?

1. Area-specific finishing curets
2. Hoes
3. ☞ Periodontal files
4. Universal curets

For this item, the candidate would be required to use the cognitive ability of critical thinking. That is, the candidate would be required to solve the problem of an over extension using knowledge of instrumentation, dental anatomy, and dental materials.

As stated in the Guidelines for Educational and Psychological Testing (1987):

> The first task for test developers is the adequate specification of the universe of content that a test is intended to represent, given the proposed uses of the test... Content related evidence for test validity is a central concern during test development... Expert professional judgement should play an integral part in developing the definition of what is to be measured: describing the universe of content, generating or selecting content samples and specifying the item format and scoring system (CPA, 1987, p.10).

To ensure the content validity of the Examination, the NDHCB, its Committees and the Test Consultants followed the Guidelines for Educational and Psychological Testing (CPA,1987) during each phase of the examination development process. This meticulous attention to a precise step by step process has enabled the NDHCB to be confident that the Examination is a valid and reliable certification examination. This fact has been confirmed by the statistical analyses that is conducted following each sitting of the Examination.

Since the first sitting of the Examination in April, 1996, the Examination has been offered twelve times to 3086 candidates. The Examination is offered twice a year in writing centres in Canadian Colleges and Universities where dental hygiene programs are taught. All of the Canadian dental hygiene regulatory authorities have indicated their support, in principle, for the concept of a national credentialling examination. Currently, the Examination certificate is required as one criterion for registration/licensure in five provinces in Canada. It is anticipated that legislative changes will facilitate the use of the National Examination as a licensing requirement by all jurisdictions in the near future.

The National Dental Hygiene Certification Board would like to thank all the talented individuals who participated in the development of the Examination competencies, blueprint, items and examination forms. With your expertise and dedication, a valid and reliable measurement of entry level dental hygiene practice has been developed. The National Dental Hygiene Examination has been able to achieve a standard of excellence that exceeds the recognized standards for testing.

Table 1

TAXONOMIES FOR ITEMS

Cognitive Ability Level	Percentage of Items on the Dental Hygiene Examination
Knowledge/Comprehension	20–30%
Application	45–55%
Critical Thinking	20–30%

Table 2

SPECIFICATIONS FOR CLIENT AGE AND GENDER

Age Group	Target Percentage of Items on the Examination	Target Percentage of Males	Target Percentage of Females
Child & Adolescent (0-18 years)	20–40%	10–20%	10–20%
Adult (19–64 years)	30–50%	15–25%	15–25%
Older Adult (65+ years)	20–40%	10–20%	10–20%

Table 3

COMPETENCY GROUPING

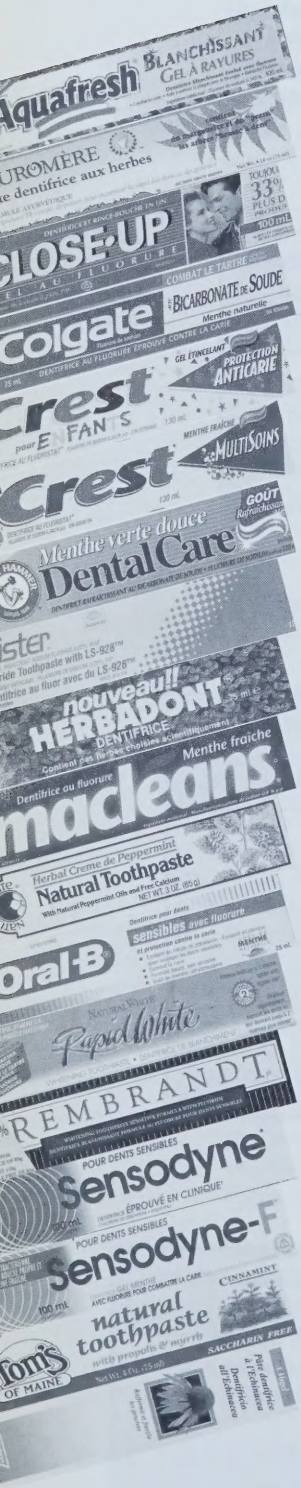
	1. Very/Extremely Important	2. Important
A. High Frequency	Group 1-A: 33 Competencies	Group 2-A: 30 Competencies
B. Low Frequency	Group 1-B: 33 Competencies	Group 2-B: 33 Competencies

ARTICLE GAGNANT DU PRIX DU LECTEUR 1999 DE L'ORDRE DES HYGIÉNISTES DENTAIRES DU QUÉBEC

Référence : L'Explorateur, Revue de l'Ordre des hygiénistes dentaires du Québec, Avril 1999.

Mise à jour sur les dentifrices

par Christine Thibault, H.D., B.Sc.



Il existe plusieurs façons de se nettoyer les dents. En effet, autant il y a de dentifrices sur le marché québécois, autant il y a de «recettes» différentes !

Les dentifrices contiennent tous des ingrédients de base : abrasifs, eau, humectants, détergents, agents liants, arômes, édulcorants, colorants et agents de conservation, auxquels on ajoute des agents thérapeutiques. Par contre, les types d'agents utilisés de même que leurs proportions varient d'un produit à l'autre et cela est un secret bien gardé par les manufacturiers !

Dans le présent article, les différents dentifrices ont été regroupés par catégories sans tenir compte, pour des raisons de concision, de leur degré d'abrasivité, de leur présentation en pâte ou en gel, ni de leur saveur.

Dentifrices fluorurés

Indication : Prévenir la carie.

Ingrédients actifs :

- Fluorure de sodium (NaF) et/ou
- Monofluorophosphate de sodium (MFP).

Recommandation : Toujours choisir un dentifrice qui contient du fluorure, ce dernier étant nécessaire à la dent tout au long de sa vie.

Dénomination commerciale :

- Aim;
- Aquafresh Triple protection;
- Close-up menthe verte;
- Close-up rouge;
- Colgate protection contre la carie;
- Crest protection anticarie;
- Glister (Amway);
- Macleans.

Presque tous les dentifrices contiennent du fluorure sauf ceux qui portent la mention «sans fluor» et les dentifrices naturels qui en contiennent rarement.

Exemple de dentifrices sans fluorure :

- Sensodyne original (rose);
- Pepsodent;
- Topol sans fluorure.

À l'opposé, *Prévident 5000 plus* est un dentifrice à très haute teneur en fluorure qui peut renforcer l'émail de la dent et aider à prévenir ou enrayer la carie de racine.

Dentifrices antitartre

Indication : Retarder la formation du tartre supragingival.

Ingrédients actifs :
Pyrophosphates solubles ou autres composés chimiques.

Mise en garde :

- N'élimine pas le tartre déjà existant, ni ne réduit la formation du tartre sous-gingival. Seul un nettoyage dentaire professionnel peut enlever le tartre.
- Recommandés uniquement aux adultes et aux enfants de plus de 12 ans.

Remarques :

- Ces dentifrices ne coûtent pas plus cher que les autres; on ne perd donc rien à les essayer si on a tendance à former du tartre facilement.
- L'effet antitartre du dentifrice Colgate Total ne dépend pas des pyrophosphates mais plutôt d'une combinaison triclosan/gantrez.
- Certains dentifrices portent la mention «combat le tartre lors du brossage» mais ne contiennent pas d'agents antitartre. C'est plutôt l'action mécanique du brossage qui combat le tartre.

Dénomination commerciale :

- Aquafresh combat le tartre;
- Close-up anti-tartre avec bicarbonate de soude;
- Colgate anti-tartre;
- Colgate sensation blanchissant antitartre;
- Crest Multisoins;
- Crest protection antitartre;
- Dental Care combat le tartre;
- Natural White dentifrice de blanchiment combat le tartre.

Dentifrices antibactériens

Indication : Réduire la gingivite par son pouvoir antibactérien.

Ingrédients actifs :
Triclosan avec ou sans gantrez (le gantrez favorise la rétention) ou sanguinarine.

Mise en garde :
- Sont utiles en présence de gingivite (au stade du saignement).
- Ne remplacent pas une hygiène dentaire adéquate.
- Sont recommandés uniquement aux adultes et aux enfants de plus de 12 ans.

Remarques :
- Ne semblent pas favoriser l'apparition de bactéries de souches résistantes, bien que la prolifération de produits antibactériens dans l'environnement puisse en laisser plus d'un perplexes.
- Malgré son appellation, Crest Multisoins est un dentifrice antitartre mais non antibactérien.

Dénomination commerciale :
- Colgate Total;
- Crest Ultra;
- Sensodyne-F (maintenant avec Triclosan);
- Viadent (sanguinarine).

Dentifrices blanchissants

Indication : Aide à éliminer les taches extrinsèques tenaces.

Ingrédients actifs :
- Silice;
- Alumine;
- Polyphosphates.

Mise en garde :
- Ces dentifrices ne peuvent blanchir les dents. L'effet blanchissant est dû à l'enlèvement des taches de surface plutôt qu'à un changement réel de couleur de l'émail.
- Certains contiennent des abrasifs puissants qui peuvent endommager les tissus mous.
- D'autres contiennent des abrasifs doux dont le pourcentage au volume est augmenté, ce qui ne les rendrait toutefois pas plus abrasifs.

Remarques :
- La plupart de ces dentifrices coûtent beaucoup plus cher qu'un dentifrice ordinaire.

Dénomination commerciale :
- Aquafresh blanchissant;
- Crest Extra-blanchissant;
- Colgate Platinum;
- Colgate sensation blanchissant;
- Natural White dentifrice de blanchiment;
- Natural White Rapid White dentifrice de blanchiment;
- Pearl drops dentifrice blanchissant en gel;
- Pearl drops dentifrice blanchissant extra-fort;
- Rembrandt formule originale;
- White Balance dentifrice blanchissant les dents;
- White Step dentifrice concentré blanchissant les dents.

Dentifrices pour dents sensibles

Indication : Bloquer la transmission de la douleur afin que l'hygiène dentaire ne soit pas compromise à cause d'un brossage douloureux.

Ingrédients actifs :
- Chlorure de strontium – obture les canalicules dentinaires et est particulièrement efficace pour réduire la sensibilité tactile ou;
- Nitrate de potassium – bloque la transmission des influx nerveux sensitifs et convient le mieux pour réduire la sensibilité thermique (chaud, froid) et osmotique (sucré, acide).

Mise en garde :
- On devrait vérifier auprès de son dentiste qu'on ne souffre pas d'un problème dentaire plus sérieux.
- Sont recommandés uniquement aux adultes et aux enfants de plus de 12 ans.

Remarques :
- Le soulagement peut prendre deux semaines à se faire ressentir.
- Pour obtenir les mêmes effets bénéfiques que les dentifrices réguliers, d'autres ingrédients peuvent y être ajoutés comme les agents antitarte, antibactériens ou le bidarbonate de soude.
- Possèdent souvent une abrasivité relativement faible.

Dénomination commerciale :
- Aquafresh Sensitive;
- Crest pour dents sensibles;
- Dental Care Sensitive;
- Oral-B dentifrice pour dents sensibles;
- Rembrandt pour dents sensibles;
- Sensodyne-F.

Dentifrices au bicarbonate de soude

Indication : Surtout pour répondre au goût des consommateurs. Image «naturelle» sans effets nettoyants particuliers. Peuvent allier une protection contre la carie et parfois contre le tartre.

Ingrédients actifs :
- Bicarbonate de soude.

Mise en garde :
Peuvent être déconseillés aux personnes suivant un régime à faible teneur en sodium.

Remarques :
- L'idée selon laquelle ces dentifrices seraient trop abrasifs pour être employés quotidiennement est totalement fausse. En effet, le bicarbonate de soude est au

moins aussi doux pour les dents que d'autres substances abrasives couramment utilisées. De plus, il perd de son abrasivité lorsqu'il est mouillé.
- Si on utilise du bicarbonate de soude nature pour se brosser les dents, il est conseillé de compléter avec un rince-bouche fluoruré.
- En pratique, on constate que les personnes qui utilisent un dentifrice contenant une concentration élevée de bicarbonate de soude ont une moins forte récurrence de taches.
- Possèdent souvent une abrasivité relativement faible.

Dénomination commerciale :
- Aquafresh bicarbonate de sodium;
- Crest protection anticarie avec bicarbonate de soude;
- Dental Care;
- Natural White dentifrice de blanchiment au bicarbonate de soude;
- Sensodyne-F bicarbonate de soude rafraîchissant;
- Topol plus avec bicarbonate de soude;
- White Balance dentifrice blanchissant les dents avec bicarbonate de soude.

Dentifrices contenant du peroxyde

Indication : Contrairement à ce que plusieurs pensent, la concentration de peroxyde présent dans ces dentifrices n'est pas assez élevée, de même que le contact avec les dents n'est pas assez prolongé pour les blanchir. Ces dentifrices aideraient plutôt à dégager les débris logés dans les endroits difficiles d'accès en créant un effet moussant dû à la propriété du peroxyde de libérer de l'oxygène.

Ingrédients actifs :
- Bicarbonate de soude;
- Peroxyde.

Remarques :
- Jusqu'à tout récemment, ces dentifrices n'étaient pas autorisés au Canada.
- Présentement, il n'y a pas d'études disponibles concernant l'efficacité et l'innocuité du peroxyde présent dans un dentifrice pour utilisation quotidienne.

Dénomination commerciale :
- Colgate sensation bicarbonate de soude et peroxyde.

Dentifrices pour fumeurs

Indication : Non recommandés.

Principe actif : Augmentation du taux d'abrasivité pour enlever les taches causées par la cigarette.

Mise en garde :
- Danger d'usure prématurée de l'émail et de récession gingivale.

Dénomination commerciale :
- Topol;
- Topol sans fluorure.

Dentifrices pour enfants

Indication : Encourager le brossage des dents chez les enfants.

Ingrédients actifs :
- Fluorures – certains peuvent en contenir moins ou pas du tout.

Mise en garde :
- Il est important que les enfants utilisent un dentifrice fluoruré dès l'apparition de leurs dents. Par contre, à cause de leur bon goût, les dentifrices pour enfants peuvent favoriser l'utilisation d'une trop grande quantité de dentifrice.
- Pour les enfants de moins de 6 ans, il est recommandé :
  - ☞que le brossage soit supervisé par un adulte;
  - ☞que soit utilisée une quantité de dentifrice plus petite que la grosseur d'un pois (la quantité égale à un pois, qui était jusqu'à présent généralement recommandée, est en réalité trop grande);
  - ☞d'éviter d'avaler le dentifrice;
  - ☞de cracher après le brossage.

Sinon, on devrait utiliser un dentifrice contenant une plus faible concentration de fluorure.

Dénomination commerciale :
- Aquafresh pour enfants;
- Baby Orajel;
- Colgate Super Star;
- Crest pour enfants;
- Oral-B Les Razmoket;
- Pre Step (sans fluorure).

Dentifrices naturels

Indication : Lorsqu'on désire éviter des ingrédients artificiels comme les édulcorants, les colorants et les agents de conservation.

Ingrédients actifs :
- À part les édulcorants qu'on préfère éviter, on retrouve les mêmes catégories d'ingrédients de base qu'un dentifrice ordinaire, à la différence qu'on privilégie l'emploi de substances naturelles.

Mise en garde :
- Contiennent rarement du fluorure.
- Les extraits végétaux causent parfois de l'irritation aux gencives et des réactions allergiques.

Remarques :
- Souvent importés, ce qui explique leur coût élevé.
- Certains tiennent plus du remède que du dentifrice de par leur impressionnante liste d'extraits végétaux.

Dénomination commerciale :
- A. Vogel (Suisse) pâte dentifrice à l'échinacée;
- A. Vogel (Suisse) pâte dentifrice au romarin;
- Auromère (Inde);
- Auromère (Inde) sans menthe;

- Dentargile (France) citron;
- Dentargile (France) menthe;
- Herbadent (Italie);
- Nature's Gate (USA) gel dentifrice naturel à base de plantes : menthe fraîche, wintergreen, cerise;
- Nature's Gate (USA) Herbal cream à l'anis, à la menthe poivrée, à la menthe;
- Peeler (USA) menthe verte, menthe poivrée, cannelle;
- Shaklee;
- Tea Tree (Austalie);
- Tom's of Maine (USA) menthe poivrée, menthe verte, cannelle, fenouil, bicarbonate de soude;
- Vegetocaryl (France) pâte dentifrice pour gencives sensibles;
- Vegetocaryl (France) pâte dentifrice blancheur;
- Vicco (Inde).

Dentifrices homéopatiques

Indication : Recommandés avec les traitements homéopathiques.

Ingrédients actifs : Ressemblent davantage à ceux des dentifrices naturels, à l'exception de la menthe. En effet, ces dentifrices ne contiennent jamais de menthe, cette dernière étant incompatible avec les traitements homéopathiques.

Remarques :
- Contiennent souvent du fluorure.

Dénomination commerciale :
- Dentifrice homéopathique Lehning (France);
- Dentifrice homéopathique Vendôme (France);
- Homéodent 2 (France).

Conclusion

En ayant en mémoire cette mise à jour, on peut aussi orienter notre choix en recherchant le sceau de reconnaissance de l'Association dentaire canadienne qui est symbole de qualité éprouvée et d'efficacité reconnue en matière de prévention et de contrôle des caries et quelquefois de réduction de la gingivite.

Pour plus d'informations concernant un dentifrice, on peut aussi contacter le manufacturier.

Pour répondre aux curieux qui s'interrogent sur la raison d'être de la date de péremption qui apparaît sur l'emballage de certains dentifrices, la loi exige que les dentifrices contenant du fluorure aient un numéro DIN (Numéro d'identité pour médicaments) et une date de péremption, car le fluorure entre dans la catégorie des médicaments.

Finalement, il est important de souligner que, si un dentifrice cause des irritations ou provoque de la sensibilité, il faut cesser son utilisation.

Les professionnels de la santé dentaire devraient connaître la panoplie de dentifrices disponibles sur le marché ainsi que leurs effets bénéfiques, afin d'aider leurs clients à effectuer des choix judicieux, bien que le brossage et l'utilisation de la soie demeurent la base d'une hygiène dentaire adéquate.

Présentation de l'auteur

Diplômée en techniques d'hygiène dentaire du Collège Maisonneuve en 1987 et bachelière en sciences de l'Université de Montréal en 1998, l'auteur, Madame Christine Thibault, est une professionnelle active et engagée au sein de la profession d'hygiéniste dentaire.

En effet, elle oeuvre depuis plusieurs années au sein du comité de formation continue et professionnelle de l'Ordre, effectue des recherches scientifiques sur différents produits, publie régulièrement des articles dans la revue scientifique *L'Explorateur* et est une personne ressource pour plusieurs revues destinées au grand public dont *Protégez-vous* et *Coup de pouce*. De plus, elle fut récipiendaire du Prix Sylvie de Grandmont en 1996, prix d'excellence soulignant sa contribution exemplaire au développement at au rayonnement de la profession. Madame Thibault pratique en cabinet privé où elle a la possibilité de partager le fruit de ses recherches.

Références

1. Consumer Reports, *Which toothpaste is right for you?* Août 1998.
2. *L'Explorateur*, Revue de l'Ordre des hygiénistes dentaires du Québec, *Les dentifrices... lequel choisir?* Vol. 5, No 1. Avril 1995.
3. Oral Health, *Peadiatric dentistry, young children and fluoride toothpaste*, Août 1995.
4. Therapeutics, *Beyond Fluoride: Dentifrices that offer other benefits.* Vol. 43, No 4, 1998.
5. VC Berkeley Wellness Letter, *Toothpaste: how much does the brand name matter?* Juillet 1998.

Perio REPORTS

Bimonthly publication designed for dentists and dental hygienists concerned about their patient's periodontal health. Each issue summarizes periodontal research of specific interest to clinicians. Easy to read format keeps you up to date on the latest research findings.

Journals reviewed for **Perio REPORTS** include:
Journal of Periodontology
Journal of Clinical Periodontology
Journal of Periodontal Research
Journal of Dental Research
Periodontal Abstracts
Quintessence International
JADA, JADHA

☐ Please send sample issue for my review

☐ $48 one-year ☐ $84 two-year

Name_____
Address_____
City _____Prov._____Postal Code_____

Mail to:
Perio REPORTS, P.O. Box 52090
311 - 16th Ave. NE, Calgary, Alberta T2E 8K9

INTRODUCING

ORAL CARE SYST

CREATED B

A PERIODONT

NOT

MARKETING DEPARTME

knoll

BASF Pharma

AN
EM
Y
IST,
A
NT.

INTRODUCING ORAL PLAN™, a new, complete approach to oral care that was developed by someone whose expertise lies in teeth and gums, not market share. Oral Plan consists of a revolutionary, new dental floss, a patented antibacterial mouth rinse and a low abrasion whitening toothpaste[1]. When used daily, they remove plaque and deliver antimicrobial medication directly to the site where the most damage is done - between teeth and under the gum line.

Before After
Example of Streptococcal Kill Rate*

A FLOSS THAT ALSO ACTS AS A DRUG DELIVERY SYSTEM

Oral Plan Antibacterial Floss is the first dental floss that is specially treated to contain fluoride, cetyl pyridinium chloride (CPC) and triclosan, so it delivers medication directly to the tooth surface at the base of the pocket, where cavities and gum disease start. CPC and triclosan are antibacterial agents that have been shown to inhibit the growth of plaque- and gingivitis-causing bacteria. Flossing with Oral Plan not only removes debris from between teeth, it also removes bacterial plaque that causes gingival disease.

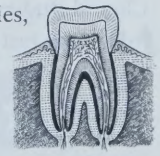
RINSE AWAY BAD BREATH AND HARMFUL BACTERIA

Oral Plan Antibacterial Mouth Rinse also contains a unique combination of CPC, triclosan and fluoride. Its minty fresh formula strengthens tooth enamel and prevents bacterial plaque from forming between brushings. And it doesn't contain ingredients that could stain your patients' teeth.

WHITEN TEETH WITHOUT BLEACH OR PEROXIDE

Your patients may be eager to try some of the new whitening toothpastes. Oral Plan Special Whitening Toothpaste removes plaque and cleans and whitens teeth with very low abrasivity. And it's safe to use on all dental work including porcelain and other restorative materials. So they can clean and whiten their teeth without worrying about damaging the enamel coating.

Oral Plan is a complete oral care program for your patients. With both fluoride and proven antibacterial ingredients, it inhibits growth of bacterial plaque and delivers medication to all sites of the tooth surface - labial, lingual and interproximal - providing exceptional protection against cavities, gingivitis and gum disease. And it was developed by a periodontist, someone who knows what it takes to keep teeth and gums perfectly healthy.



A COMPLETE ORAL CARE SYSTEM DEVELOPED BY A PERIODONTIST.

1. Hefferren John A. A Laboratory Method for Assessment of Dentrifrice Abrasivity. *J Dent Res*, July-August 1976 Vol. 55, No. 4.
Abrasivity data on file and available by calling toll-free 1-877-229-PLAN (7526).
*Graphic representation of before and after example of streptococcal kill rate.

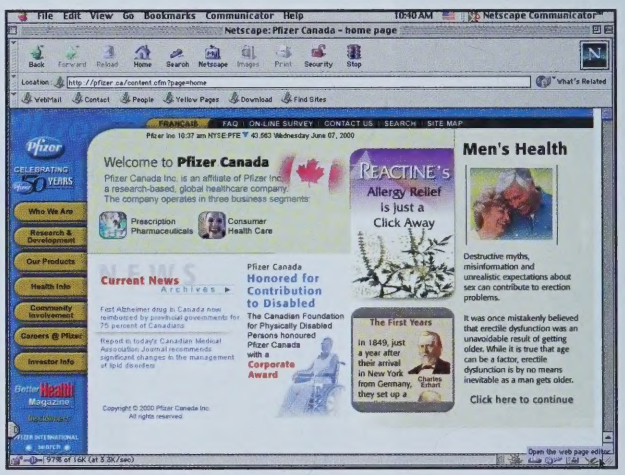
Pfizer Canada Launches an Educational Health Centre on the Internet for the Public and Health Care Professionals

Pfizer Canada Inc. launched an educational health centre for patients and healthcare professionals on its new Web site at **www.pfizer.ca**

The Learning Centre has two distinct components, one aimed at patients and the general public, the other at physicians and pharmacists. The patient-oriented component provides clear, easy-to-understand information on significant ailments that affect a growing number of Canadians. The resource material describes symptoms, explains available treatment options and offers advice on prevention.

"The creation of the Learning Centre on our Web site is the logical extension of our social and community commitment. The project grew from our vision to improve Canadians' health and quality of life, and to become the leading healthcare company in the country" declared Jean-Michel Halfon, President and Chief Executive Officer of Pfizer Canada Inc.

Pfizer Canada Inc. is the Canadian operating branch of New York-based Pfizer Inc., a research-based global healthcare company whose mission is to discover and develop innovative medicines and other products which improve the quality of life of people around the world and help them enjoy longer, healthier and more productive lives.



www.pfizer.ca

Trident Launches First Gum to Whiten Teeth and Fight Cavities

TORONTO — (April 18, 2000)
Canadians will soon find it easier to flash their pearly whites thanks to new **Trident Advantage**, the first gum that helps whiten teeth as it prevent cavities. The innovative dental gum is approved by Health Canada and is produced by Adams Canada, a division of Warner Lambert.

Clinical studies show chewing two pieces of Trident Advantage just three times a day for 20 minutes after eating results in cleaner, whiter, healthier* teeth than brushing alone. Trident Advantage is clinically proven to prevent cavities by up to 62 percent when used in conjunction with a proper oral hygiene program[1] and features the added benefit of baking soda, which helps clean and whiten teeth.

TRIDENT ADVANTAGE Backgrounder

- Trident Advantage contains whitening baking soda.
- Chewing two pieces of Trident Advantage three times a day for 20 minutes after eating will result in cleaner, healthier teeth* than brushing alone.
- Medicinal ingredient Xylitol, is a natural sweetener found in fruits, vegetables and other plants.[2]

Non-Medicinal Ingredients: Acesulfame-potassium; Aspartame which contains Phenylalanine; Maltitol; Sodium Bicarbonate.

* clinically proven to reduce cavities by up to 62% when used in conjunction with a proper oral hygiene program (based on a 2 year study).

1. D. Kandelman and G. Gagnon, *Journal of Dental Research* 69 (II): 1771–1775, 1990.
2. Birkhed D. Cariologic aspects of xylitol and its use in chewing gum: a review. *Acta Odontol Scand* 52: 116–127, 1994.

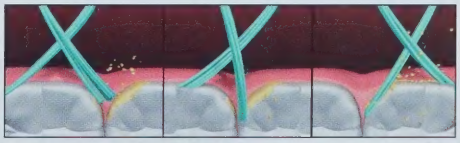
Better results from every angle.*

From the most advanced manual toothbrush ever designed come the most extraordinary results ever seen.*

Unprecedented research and development. The Oral-B® CrossAction® is the result of extensive scientific research into every aspect of toothbrushing. Every feature of the CrossAction—from the unique CrissCross™ bristles to the easy-grip ergonomic handle—has but one purpose: to help patients do a better job brushing.

Unmatched efficacy. In over 80 head-to-head laboratory comparisons and 16 clinical studies, the cleaning ability of CrossAction was consistently superior to every other toothbrush tested.*

Unbeatable recommendation. When you recommend the Oral-B CrossAction, you're not only recommending the most advanced manual toothbrush in the world today—you're giving your patients the ability to significantly improve their oral hygiene every time they brush.*



CrissCross bristles are angled to penetrate deep between teeth to lift and sweep away plaque.

Oral-B®

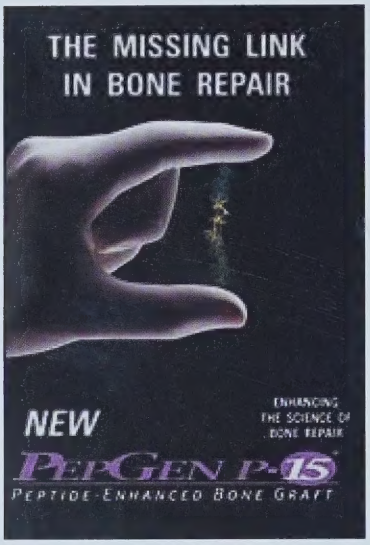
CROSS ACTION®

To receive more clinical information on the Oral-B CrossAction, simply call 1-800-268-5217. Details are also available on our website at www.oralb.com

©2000 Oral-B Laboratories

* *AmJDent* 2000; 13: Special Issue

Presence — A Healthview Euro RSCG Company



PepGen P-15 is the first and only bio-engineered bone graft technology that facilitates bone repair in patients with periodontal disease. PepGen P-15 promotes the attachment of reparative cells from surrounding tissues and facilitates bone repair for better defect fill, clinical attachment and predictability while the synthetic peptide (P-15) eliminates immunological concerns associated with human allograft products. In addition, it showed no product-related side effects in the six-month multi-center clinical trial.

PepGen P-15, recently approved for marketing in Canada, is now available from **CeraMedDental**. PepGen P-15 is cost effective for both professionals and patients because it reduces the need for retreatment while maintaining a balance to be autoclaved up to three times for subsequent procedures.

In August of 1996, DENTSPLY and the CeraMed Corporation announced the formation of a new company called CeraMed Dental, L.L.C. to carry out research, development, sales and marketing of advanced technology bone replacement graft materials.

"Tissue engineering is a relatively new frontier for dentistry and, with the introduction of PepGen P-15, DENTSPLY is now strongly represented," said John C. Miles II, DENTSPLY chairman and chief executive officer. "We are confident that this new bioengineered bone replacement graft technology represents an important breakthrough in repairing the destruction of bone caused by periodontal disease."

Debacterol® Stops Canker Sores in 5 Seconds Flat — With a One-Time Treatment

Debacterol is the first and only canker sore treatment that addresses both the pain and the necrosis with one quick application, and leads to restoration of the affected site within 3–5 days.

Debacterol is the only treatment for ulcerating oral mucosal lesions that:

- completely stops oral ulcer pain,
- seals damaged oral mucosal tissues,
- kills infectious organisms, and
- aids natural healing processes.

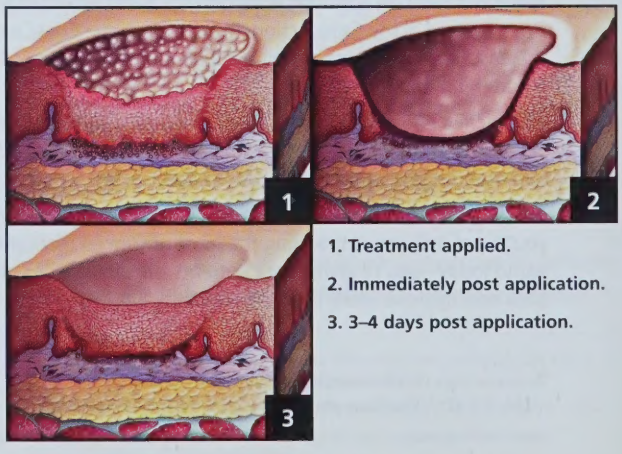
Clinical indication for Debacterol include canker sores (recurrent aphthous stomatitis (RAS), or aphthous ulcers) acute necrotizing ulcerative gingivitis (ANUG), and oral lesions arising from systemic illness.

Debacterol is available to dentists and physicians, and by prescription to consumers. It is common practice for dental hygienists, nurse practitioners and physician assistants to be trained in the use of Debacterol for the treatment of common lesions such as RAS, and to provide this treatment on a routine basis.

For more information, contact:

Reg Dupré, President, Northern Research Laboratories
612–820–4448, regdupre@northernresearch.com

Don Dewey, Principal, Dewey Communications
612–820–0054, dondewey@deweycomm.com



1. Treatment applied.
2. Immediately post application.
3. 3–4 days post application.

ABSTRACT

Reviewed by Carol Barr Overholt, Dip.D.H., B.Ed., Contributing Editor

ARTICLE:

Use of a Biodegradable Chlorhexidine Chip in the Treatment of Adult Periodontitis: Clinical and Radiographic Findings

Authors: Marjorie K. Jeffcoat, Kent G. Palcanis, Thomas W. Weatherford, Marion Reese, Nico C. Geurs and Moshe Flashner

Journal: *Journal of Periodontology* — February 2000

Due to chlorhexidine's proven anti-inflammatory and anti-plaque qualities, this agent has been added to the arsenal of weapons against gingivitis in most dental offices. It is described by the authors as safe, cost-effective, easy to use and client compatible. Although its effects against gingivitis have been well proven, studies have not established its effectiveness against periodontitis.

Preceding multi-site trials have demonstrated the effectiveness of a "biodegradable chlorhexidine-gelatin chip (CHX) in reducing probing depths in patients with periodontitis". The study outlined in this article employed a subgroup of clients from a parent study to resolve whether the CHX chip could preserve alveolar bone heights over a period of 9 months.

The study was set up as a 9-month placebo-controlled, randomized, double-blinded clinical trial involving 45 clients experiencing adult periodontitis. The purpose of the study was to compare clinical attachment loss (and probing pocket depths), along with radiographic analysis of alveolar bone height changes, with an eye to making subgingivally-delivered CHX deliverable by non-specialists in the treatment of clients with mild-to-moderate periodontitis.

Fourty-five clients aged 30 to 80 years, in good overall health and with "mild-to-moderate" periodontitis (at least four 5-8 mm probing pocket depths) were admitted into the trial. Control groups were administered either scaling and root planing alone (SRP) or SRP plus a placebo chip. The experimental group received SRP alone or SRP plus a CHX chip. The chips were inserted into a dried and isolated periodontal pocket. Standardized, vertical bite-wing radiographs were exposed at baseline and again at 9 months and were analyzed using quantitative digital subtraction radiography.

Of the 42 participants who completed the study, at the 9-month mark, 15% of the SRP treated members evidenced alveolar bone loss in 1 or more sites. Of those clients treated with SRP and the active CHX chip, none experienced bone loss. Further, at 9 months, significant differences in the change in probing pocket depths "and clinical attachment levels favouring the active chip over SRP or SRP plus the CHX chip" were also documented. The authors conclude with a statement indicating that these data support that the CHX chip, when paired with scaling and root planing, notably decreases alveolar bone loss.

D-Sharp
DENTAL INSTRUMENTS

" Bringing your Dental Instruments Back to Life "

Well-maintained instruments increase practice productivity, offer better patient comfort and are essential for superior dental care. At D-Sharp, we offer a complete Dental Instrument re-sharpening, re-tipping and Handpiece Repair service.

Please call to arrange for a pick-up! Ask us about our new "State of the Art " sharpening stones and educational video!

Better Quality Care
Higher Productivity
Better Quality Service
Lower operating Costs

Please call our Toll Free Number:
1-887-8DSHARP (1-887-837-4277)
Fax: (905) 331-5593
email: inquiries@d-sharp.com
www.d-sharp.com

Toronto • Calgary • Vancouver

DENTAL ABSTRACTS

DENTAL ABSTRACTS VOLUME 44 #6 NOV./DEC. 1999

Incorporating Risk Assessment Into Periodontal Treatment Planning

All four articles in this issue of Probe *are reprinted with permission of Dental Abstracts. For more information and subscription rates, contact (314) 453–4351 or visit www.mosby.com/periodicals*

INTRODUCTION

The progression of periodontal disease is strongly influenced by the body's response to bacteria. The primary risk factors that influence the disease process are reviewed. By incorporating assessment of periodontal risk factors into diagnosis and treatment, dentists can gain added information about prognosis and plan treatment more effectively.

SMOKING

The negative effects of smoking on periodontal health are dose-related: more than 10 cigarettes a day are associated with increased risk of periodontal disease. Smoking cessation can be of benefit, but the cumulative effects of years of smoking can include bone loss and attachment loss.

GENETICS

When the body produces high levels of the inflammatory mediator interleukin 1 (IL-1) in response to a bacterial challenge, increased tissue destruction may ensue. Individuals who have the IL-2 genotype are at increased risk for periodontal disease. Dentists should consider genetic predisposition as part of a patient's overall risk level.

ORAL HYGIENE

Poor oral hygiene can lead to periodontal destruction. Patient compliance and oral hygiene habits are modifiable behavioral factors. Patients who have other risk factors (e.g., smoking, IL-1 genotype) may need more frequent follow-up care through a periodontal maintenance program, even if their disease is in an early stage. Aggressive plaque control, more frequent supportive periodontal therapy, bacterial culturing, periodontal surgery, or host- response modification may be needed in patients with poor hygiene and another risk factor who have not responded to therapy.

RISK ASSESSMENT

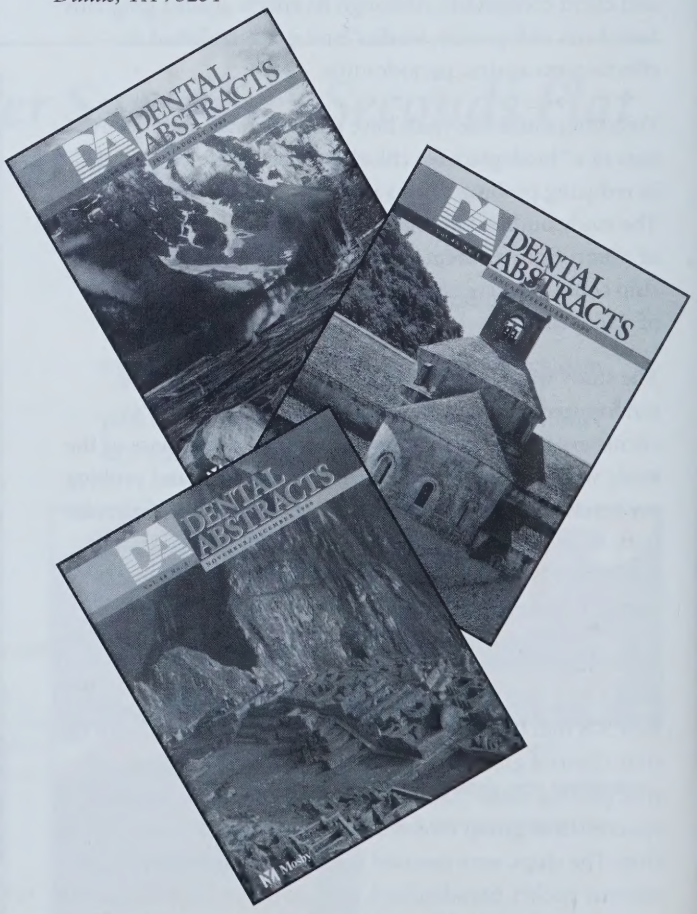
When forming a treatment-restorative plan or assessing tooth prognosis in periodontal patients, it is important to consider the presence of a smoking habit or the IL-1 genotype. A prosthesis may need additional abutments, or implant treatment may be advised. Patients identified as "high risk" may need to be scheduled more frequently for periodontal maintenance. When the response to periodontal treatment is suboptimal, it may be helpful to recognize the risk factor(s) interfering with treatment response.

CLINICAL SIGNIFICANCE

Smoking, poor compliance with oral hygiene measures, and the interleukin 1 genotype increase a patient's risk of periodontal disease. The clinician should take these risk factors into account during diagnosis and treatment planning.

Wilson TG Jr: Using risk assessment to customize periodontal treatment. *J Calif Dent Assoc* 27:627–639, 1999

Reprints available from TG Wilson Jr, 5465 Blair, Suite 200, Dallas, TX 75231



Chronic Nonspecific Mucosal Lesions Tricky to Diagnose and Treat

INTRODUCTION

Low-grade physical or chemical injuries and delayed hypersensitivity reactions may cause persistent lesions that defy diagnosis and treatment. The management of these chronic nonspecific mucosal lesions are discussed.

PRESENTATION

Clinically, these lesions may be multifocal or localized, white or speckled red and white, and flat or plaque-like; some nonspecific lesions are granular or partly erythematous. When the lesions involve striations, atrophy, or ulceration, they are referred to as lichenoid. The histophathologic appearance of reactive or allergic lesions is also nonspecific.

DIAGNOSIS/MANAGEMENT

It can be difficult to identify the cause of a nondescript lesion because the causative agent may be common in unaffected persons, there may be no obvious temporal relationship, and lesions may fluctuate. The first step is to take a detailed history, asking the patient about exposure to the possible causative agents described below. The differential diagnosis also includes lupus erythematous, graft-versus-host disease, and chronic ulcerative stomatitis.

If an easily correctable cause is identified, remove the offending agent. To not treat an undiagnosed lesion empirically with steroids because Candida may be present, steroids change the histologic appearance of inflammatory lesions, and steroid treatment can delay the diagnosis of cancer or dysplasia. Next, rule out Candida. After Candida and other easily correctable causes have been ruled out, perform a biopsy to rule out cancer, dysplasia, or other diseases. If the histologic diagnosis is nonspecific or lichenoid mucositis, begin eliminating suspect agents such as a medication, dental material, food, or oral care product.

When a thorough work-up fails to identify the cause or the lesion persists despite removal of suspected reactants, topical steroids may be indicated. Systemic steroids are indicated only for extensive, debilitating lesions refractory to topical therapy.

LICHENOID DRUG ERUPTION

Lichenoid reactions may be induced by antimalarials, diuretics, antihypertensives, nonsteroidal anti-inflammatory drugs, antimicrobials, heavy metals, oral contraceptives, and sulfonylurea hypoglycemics, among others. It may take anywhere from 1 month to 3 years of medication before the lesion develops. In consultation with the patient's physician, discontinue or substitute suspected drugs. If the drug did in fact cause the lesion, it may take 2 weeks to 2 years before the lesion resolves.

CONTACT LICHENOID REACTION

Contact with dental materials may cause lichenoid lesions, typically on the buccal mucosa, lateral tongue, or gingiva. Amalgam is the most common sensitizer, but allergy to acrylic, nickel, composite resins, and BIS-GMA has also been reported. There is little proof that galvanism between metals causes lichenoid lesions.

Restoration removal is more likely to be curative if the lesion is confined to areas in contact with the restoration. Patch testing can help identify the offending material. Following removal, symptoms should resolve in 3 months and lesions in 1 to 12 months.

FOOD/ORAL CARE PRODUCTS

Nonspecific lesions may also reflect reactions to food products, most notably cinnamon flavoring, or to oral care products. Cinnamon-flavored gum, candy, and dental floss would produce different lesion patterns based on their contact with the mucosa. Patients are often unaware that sweet vermouth and chili may also contain cinnamon. Lesions may be lichenoid or eroded and granular, and form adjacent to the contact area. The histologic appearance of cinnamon-induced lesions is diagnostic. Lesions resolve within 2 weeks of discontinuation of the cinnamon-flavored product.

White mucosal patches that extend across the maxillary labial mucosa, vestibule, and alveolar mucosa have been reported in patients who used Viadent mouthwash or toothpaste, which contain sanguinaria extract. When this unusual lesion is seen, the dentist should query the patient about the oral care products used.

ATYPICAL LICHEN PLANUS

Atypical forms of oral lichen planus may present as desquamative gingivitis, fissured white plaques on the dorsal tongue, or erythroleukoplakia with or without yellow-tan ulcers. A biopsy should be diagnostic, but treatment, poor biopsy site selection, and superimposed infection or inflammation may interfere with accurate histologic diagnosis.

Candidiasis — A lichenoid lesion may represent chronic atrophic or hyperplastic candidiasis, and candidiasis can be superimposed on other types of lesions. It is important to test patients with chronic nonspecific lesions for Candida not only because it may be a causal factor, but also because the steroids often used to treat chronic mucositis are contraindicated in patients with candidiasis.

CLINICAL SIGNIFICANCE

Chronic nonspecific mucosal lesions are frustrating to patient and dentist alike because of the difficulty in identifying the cause. By following the process described here, the dentist may be able to pinpoint the lesion's cause and treat it accordingly.

Bernstein ML: The diagnosis and management of chronic nonspecific mucosal lesions. *J Calif Dent Assoc* 27:290–299, 1999

Reprints available from ML Bernstein, Dept of Surgical and Hospital Dentistry, Univ of Louisville School of Dentistry, Louisville, KY 40292

OralCDx Analysis of Brush Biopsy can Detect Oral Cancer Early, Indicate Need for Scalpel Biopsy

BACKGROUND

Because oral cancer is asymptomatic in the early stage and early lesions often appear innocuous, many cases are caught too late, and the mortality rate is 50%. However, invasive biopsy of every benign-looking lesion identified through oral examination is impractical. A prospective multicenter study was designed to evaluate the use of OralCDx (OralScan Laboratories, Inc.), a computer-assisted method of analyzing oral brush biopsy specimens.

MATERIALS AND METHODS

Thirty-five academic dental institutions participated in the U.S. Collaborative OralCDx Study Group. In 1998 and 1999, all adult patients who had intraoral lesions displaying an epithelial component were eligible for the study. The investigators classified the lesions as suspicious or apparently innocuous; all lesions were assessed with OralCDx but suspicious lesions were also subjected to scalpel biopsy. OralCDx kits included a biopsy brush designed to obtain a complete transepithelial specimen without the use of anesthesia.

OralCDx specimens were transformed to glass slides and sent to OralScan Laboratories for analysis. Slides were scanned by a computer image-analysis system designed to identify precancerous and cancerous oral epithelial cells. A pathologist specially trained in oral cytology then reviewed the abnormal cells and diagnosed the specimen as negative, atypical, positive (definite cellular evidence of dysplasia or carcinoma), or inadequate.

RESULTS

The 945 patients had 298 clinically suspicious lesions and 647 that appeared innocuous. Scalpel biopsy yielded histopathologic evidence of dysplasia or carcinoma in 131 lesions, and OralCDx detected atypical or positive cells in all 131 (100% sensitivity rate; Table 3). Among those 131 lesions were 29 that had initially been classified as innocuous (29/647: 4.5%), and scalpel biopsy was performed as a result of the OralCDx findings. Histologic examination revealed that all 29 lesions were dysplastic or cancerous.

Table 3 —

OVERVIEW OF ALL BRUSH AND SCALPEL BIOPSY RESULTS (N = 945)

Brush Biopsy Results	Scalpel Biopsy Results			
	Malignant or Dysplastic	Benign	Not Performed	Total
Positive	78	0	2	80
Atypical	53	14	99	166
Negative	0	182	517	699
Not Performed	0	0	0	0
Total	131	196	618	945

(Courtesy of Sciubba JJ, for the U.S. Collaborative OralCDx Study Group: Improving detection of precancerous and cancerous oral lesions: Computer-assisted analysis of the oral brush biopsy. *J Am Dent Assoc* 130:1445–1457, ©1999 American Dental Association. Reprinted by permission of ADA Publishing Co., Inc.)

DISCUSSION

Even highly trained professionals may easily overlook precancerous oral lesions and early-stage oral cancers. Clinicians may improve cancer detection by using the OralCDx system to evaluate oral lesions with epithelial abnormalities. OralCDx can confirm that a lesion is benign, as well as detect dysplasia or cancer in benign-looking lesions. Positive or atypical OralCDx findings must be confirmed with histologic evaluation. The chairside oral brush biopsy method is easy to learn, requires no anesthesia, and produces little or no bleeding. Results are typically available within 3 days after the laboratory received the specimen.

CLINICAL SIGNIFICANCE

The OralCDx system may detect dysplasia and early-stage cancer before lesions become symptomatic or appear clinically suspicious. Use in general dental practice may help reduce the high mortality related to late detection of oral cancer.

Sciubba JJ, for the U.S. Collaborative OralCDx Study Group: Improving detection of precancerous and cancerous oral lesions: Computer-assisted analysis of the oral brush biopsy. *J Am Dent Assoc* 130:1445–1457, 1999

Reprints available from JJ Sciubba, Johns Hopkins Med Ctr, Div of Dental and Oral Medicine, 600 N Wolfe St, Brady 202, Baltimore, MD 21287

DENTAL ABSTRACTS VOLUME 45 #1 JAN./FEB. 2000

Clinical Practice Guidelines for Sjögren's Syndrome

INTRODUCTION

The exact causes of the autoimmune disorder Sjögren's syndrome (SS) are unclear. An estimated 1 million Americans have SS, which most commonly affects women in the fourth or fifth decade of life. The clinical signs, diagnostic methods, and management of SS are reviewed.

MANIFESTATIONS

Xerostomia, keratoconjunctivitis sicca (dry eyes), and connective tissue disease constitute the triad of SS. Along with xerostomia, oral manifestations include reduced salivary flow, glossitis, mucositis, hypertrophic parotid glands, angular cheilosis, altered taste, and a higher incidence of caries and periodontal disease. Candida albicans infection is common in SS patients.

DIAGNOSIS

To diagnose SS, a variety of diagnostic methods are used to assess eye symptoms and signs, oral symptoms, salivary function, labial salivary gland histology, and the presence of autoantibodies. Tests include laboratory studies of antibodies, histopathologic examination of minor salivary glands, sialometry, sialography/videofluoroscopy, salivary scintigraphy, and sialochemistry.

MEDICAL CONSULTATION

Patients in who SS is diagnosed should be referred to an ophthalmologist for management of ocular symptoms. Also, because SS may affect nearly every organ system, the SS patient should also be assessed by an internist. Patients with enlarged parotid glands, enlarged lymph nodes in the neck or underarm region, anemia, cryoglobulinemia, lymphopenia, cutaneous vasculitis, or peripheral neuropathy must be evaluated by an internist, hematologist, or oncologist because of the risk of non-Hodgkin's lymphoma.

DRUG MANAGEMENT

Treatment is primarily palliative and preventive. The dentist's main role is to alleviate oral dryness and prevent oral complications. Although there is no cure for SS, drugs are available to moisturize and lubricate the oral mucosa (including sialogogues such as pilocarpine hydrochloride, moisturizers, and saliva substitutes), to treat SS-associated mucositis or candidiasis, to prevent caries and periodontal disease, and to provide nutritional support. Efficacy of treatment is assessed by comparing baseline and posttreatment salivary dysfunction by means of sialometry. Patients with burning tongue may be treated with topical antiinflammatory drugs (eg. corticosteroids), anesthetics, or analgesics. Antifungal maintenance therapy is needed to prevent recurrence of candidiasis.

OTHER MANAGEMENT

To keep the mouth moist, patients should drink water often, use Oral Balance (Laclede Pharmaceuticals) at night, and use sugarless gum or candy. Patients should also avoid alcohol, tobacco, and caffeinated beverages. Oral Balance and Biotene mouthwash (Laclede Pharmaceuticals) are useful in managing soft tissue lesions/soreness; many other agents may be beneficial for treatment of acute lesions or candidiasis. To prevent caries and periodontal disease, patients must practice meticulous oral hygiene, avoid acids, and attend regularly for professional hygiene and prophylaxis; they may also rinse with sodium bicarbonate, or use Retardex (Rowpar Pharmaceuticals) for halitosis. Other preventive measures include use of Biotene toothpaste, twice-daily application of topical fluoride (5,000 ppm), chlorhexidine gluconate rinses, and the Waterpik device (Teledyne).

CLINICAL SIGNIFICANCE

Sjögren's syndrome is a difficult condition to manage. The cornerstone of dental management is prevention of complications via use of salivary substitutes or sialogogues, preventive dental care, and prompt treatment of infections or atrophy.

Rhodus NL: Sjögren's syndrome. *Quintessence Int* 30:689–699, 1999

Reprints available from NL Rhodus, Div of Oral Medicine, Univ of Minnesota, School of Dentistry, 7–536 Moos HST, 515 Delaware St SE, Minneapolis, MN 55455; E-mail: rhodu001@maroon.tc.umn.edu

Position Statement of the Canadian Dental Association — March 2000

Considerations Regarding Assessment for Fluoride Supplementation

The Canadian Dental Association supports the appropriate use of fluorides in the prevention of dental caries as one of the most successful preventive health measures in the history of health care. The availability of fluorides from a variety of sources, however, is a current reality which the practising dentist needs to take into account in dealing with patients. This is particularly true of children under the age of six, where exposure to more fluoride than is required simply to prevent dental caries can cause dental fluorosis. There is no evidence of any health problems being created by such exposure, but it is prudent to attempt to limit exposure to the optimal levels required for continuing dental caries protection. Current levels of fluoride intake from all sources are difficult to establish for any given area, but the dentist should consider general intake to the extent possible in recommending fluoride supplementation.

The following suggestions are consistent with these principles:

1. **Fluoride supplements are only required for high dental caries risk patients and may be unnecessary if the patient is receiving adequate fluoride from other sources.**
2. Before prescribing fluoride supplements, a thorough clinical examination, dental caries risk assessment and informed consent with patients/caregivers are required.
3. The Canadian Consensus Conference on the Appropriate Use of Fluoride Supplements for the Prevention of Dental Caries in Children, held in November 1997 suggested that high caries risk individuals or groups may include those who do not brush their teeth (or have them brushed) with a fluoridated dentifrice twice a day or those who are assessed as susceptible to high caries activity because of community or family history, etc.
4. The estimation of fluoride exposure from all sources should include use of fluoridated dentifrice and all home and child care water sources. Dentists should be aware of the average fluoride exposure in the area. The possible impact of fluoride reducing factors within the home such as the use of unfluoridated bottled water of some reverse osmosis devices should be taken into account.
5. Lozenges or chewable tablets are the preferred forms of fluoride supplementation. Drops may be required for individual patients with special needs.
6. The use of fluoride supplements before the eruption of the first permanent tooth is generally not recommended. When, on an individual basis, the benefit of supplemental fluoride outweighs the risk of dental fluorosis, practitioners may elect to use these supplements at appropriate dosages on younger children. In doing so, the total daily fluoride intake from all sources should not exceed 0.05–0.07 mg F / kg body weight in order to minimize the risk of dental fluorosis.
7. Following the eruption of the first permanent tooth and the associated decrease in the risk of dental fluorosis at this stage of development, fluoride supplements in the form of lozenges or chewable tablets may be used to deliver an intra-oral fluoride dose. A lozenge or chewable tablet containing 1 mg fluoride delivers the same amount of fluoride intra-orally as brushing with an average load (1 gm) of a 1000 ppm fluoride dentifrice.

Dental Waterlines — The Straight Facts an Online Web-based Course

The Office of Continuing Dental Education at the University of Texas Health Science Center, San Antonio Texas is now offering an online web-based course.

This web-based course, worth 5 hours AGD credit, is designed for dentists, dental assistants, dental hygienists, and any others involved with dental water issues.

The course presents the what, the why, and the how of the perplexing area of dental infection control. Participants will gain an understanding of the fundamental issues involved so that they can make rational and cost-effective choices.

The course uses hyperlinked text, graphics, and photos to enhance learning. Quizzes are taken online using an interactive format.

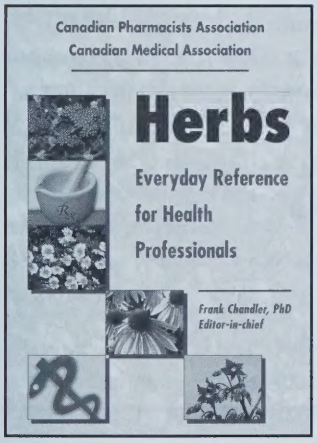
The course may be previewed by going to the following web page:
http://smile.uthscsa.edu/ce/waterline/preview.html

Information Web Directory Gives Quick Access to Support Services to Canada's Two Million Caregivers

Allianz Canada recognizes the increasing role that caregivers play in our society and the burden of multiple responsibilities they face daily. Often, caregivers are not even aware of the support services available to them. As part of Allianz Canada's ongoing program to recognize and support Canada's two million caregivers, the company has announced the roll-out of its national toll-free Allianz Canada Caregiver Information Line (**1–877–456–7676**) and the launch of the Allianz Canada Caregiver Information Web Directory (**www.allianz.ca**). For the first time ever, Canadian caregivers will have quick, free access to a directory of organizations that will provide services they need to cope.

By simply calling the toll-free Allianz Canada Caregiver Information Line (**1–877–456–7676**), caregivers can speak directly to personnel trained to direct callers to the appropriate organizations and services and by visiting the Allianz Canada Caregiver Information Web Directory (**www.allianz.ca**), caregivers can access the same directory as they can by telephone — with all the convenience of going online.

www.allianz.ca



Herbs — Everyday Reference for Health Professionals

Give your patients the facts they need to make informed decisions about using herbal products. With most pharmacies featuring natural medicine sections in response to growing consumer demands, the need for reliable, easy-to-access information from a credible source has never been greater.

Pooling out resources to provide a trustworthy resource to all health care professionals in Canada, the Canadian Pharmacists Association (CPhA) and the Canadian Medical Association (CMA) have published *Herbs. Everyday Reference for Health Professionals.* Dr. R. Frank Chandler, retired Director of Dalhousie University's College of Pharmacy, spearheads a highly qualified editorial advisory board comprising leading experts in this field: Dr. Claire Bombardier (Institute for Work and Health, Toronto), Dr. Colin Briggs (University of Manitoba, Winnipeg), Dr. George Carruthers (London Health Sciences Centre), Dr. Allison McCutcheon (University of British Columbia, Vancouver), Mr. Adil Saleh (a pharmacist from Coquitlam, BC) and Dr. Paul Saunders (Canadian College of Naturopathic Medicine, Toronto). The editorial board represents some of the most distinguished pharmacists, physicians and herbalists in Canada, all of whom have proven expertise in herbal medicine; the authors are frequent contributors to peer-reviewed publications.

Herbs is intended to give you quick and easy access to answers and advice for your patients. It features close to 60 products presented in monograph format. Unique to this book are indications for use of herbal products based on levels of clinical evidence. You will readily be able to discern whether the indication is based on a randomized clinical trial, folklore or some intermediate level of evidence.

Each product monograph includes scientific names and synonyms, chemical constituents, uses, toxicology, precautions, contraindications and adverse effects, interactions, directions for use.

The monographs are supplemented by references, clinical trials — and trial limitations — and available preliminary information. In addition, *Herbs* includes chapters on such broad issues as drug-herb interactions, cultural influences and the regulatory status of herbs.

To order *Herbs. Everyday Reference for Health Professionals* for only $53.95 per copy, please contact the **Canadian Pharmacists Association** by telephone at **1–800–917–9489** or **(613) 523–7877**, by fax at **1–800–601–1904** or **(613) 523–0445**, by E-mail at **orders@cdnpharm.ca**, or by mail at **CPhA, 1785 Alta Vista Drive, Ottawa ON, K1G 3Y6**.

Trigeminal Neuralgia in Dentistry

A patient who complains of toothache or sinusitis-like pain with no apparent dental cause may be suffering from a neurological condition known as trigeminal neuralgia, according to an article in the May/June 1999 issue of *Northwest Dentistry*.

The article by Claire W. Patterson, president of the Trigeminal Neuralgia Association, and Dr. Judd S. Copeland, DDS, surveys the causes, symptoms, and treatment of the disorder. They write that the patient usually complains of a sharp, stabbing pain that is aggravated by chewing, drinking hot or cold liquids, brushing the teeth, or talking.

Misdiagnosis of the condition can result in unnecessary dental therapies such as multiple extractions, endodontic procedures and TMJ surgery — frequently with no effect on the patient's discomfort, write the authors.

Trigeminal neuralgia is usually caused by compression of a blood vessel at the trigeminal nerve root entry-exit zone, according to the article. It produces what many physicians consider to be the most excruciating of all types of pain. The symptoms may be mild in the early stages, but develop into recurring episodes of intense, electric shock-like pain in the distribution of one or more branches of the trigeminal nerve.

The article notes the major diagnostic criterion is the presence of trigger points on the face. The slightest stimulation of any of these points results in an agonizing attack for the patient. About 25 percent of patients will respond to treatment with anticonvulsant drugs, but surgery is required for most.

CLASSIC TN HAS DISTINCT SYMPTOMS, WHICH CLEARLY SEPARATE IT FROM OTHER FORMS OF FACIAL PAIN:

- Pain is short, acute bursts rather than a dull, constant ache. Often described as electric shock-like in nature.
- Pain is usually triggered by light touch or sensitivity to vibrations, such as brushing one's teeth, a light breeze, shaving, talking.
- The pain has a tendency to come and go with periods of intense, sometimes totally debilitating pain, followed by completely pain-free periods of remission lasting from weeks to months or possibly longer.
- Most patients experience pain during the day while they are up and about. Generally, they are free of pain while asleep unless it is triggered by the touch of bed linens or changes in position.

The patient history and description of symptoms are the major aids in confirming the diagnosis of TN, the authors write. Most doctors will recommend a CAT scan or MRI along with other laboratory tests. These are intended mostly to rule out other causes of pain such as tumors or multiple sclerosis. There is no specific test to confirm the diagnosis of TN, according to the authors.

Dental Editor's Digest/Dec 1999

New BC Study Finds Home Care More Cost Effective to Government than Residential Care

Growth in the elderly population and restraint in the health sector have led decision-makers to place an increasing priority on home care services. But until now, very little Canadian research has been able to answer a fundamental question crucial to provincial health care budgets: Is home care for the elderly a cost-effective alternative to care in a long term care facility? In other words, if two elderly clients have the same health needs, where would government see the best value for the amount of money spent: with the client supported at home, or with the client cared for in a residential facility?

A new British Columbia study has now found that, on average, the overall health care costs to government range from one-half to three-quarters of the costs for clients in facility care, according to a recent news release.

"The central finding of this study was that given two clients with the same level of needs, the best value to government comes from supporting the client at home," said Dr. Marcus Hollander, principal investigator of the study. "Since most elderly clients prefer to stay at home for as long as possible, and are highly satisfied with home care, this means it is good for both governments and clients if the services are there to enable them to stay at home."

The study and its findings are the first results to emerge from the National Evaluation of the Cost-Effectiveness of Home Care, a $1.5 million program of research funded by the Federal Government's Health Transition Fund. The research program consists of 15 inter-related substudies which are attempting to assess the differences in costs and quality between home care and various forms of institutional care.

Study One, called *A Comparative Cost Analysis of Home Care and Residential Care Services*, is the first time in Canada that the actual dollar costs to government for home care and residential care clients have been measured for a full range of health costs. The study compared costs for home care and residential care, pharmaceuticals, fee-for-service physician visits and hospital services.

The study found that savings of 50 per cent could be obtained if home care replaced residential care for elderly clients who were stable in their type and level of care. The more unstable the client's health, and the more he or she moved through increasing levels of care, the more home care costs approached the costs of residential care. For clients who died, the costs were higher in home care. "It would appear from the data that home care clients who are dying enter into the acute care system, perhaps having numerous hospital admissions, and get a full range of aggressive medical care that may offset any savings that were obtained by keeping them at home," Hollander said.

The study found that about one-half of the overall health care costs for home care clients could be attributed to their use of acute care hospital services. It also found that when clients go into long term care institutions, their facility costs increase but their use of other services decreases. It appears that staff at residential facilities may be able to care for client needs so that they do not need to be admitted to acute care hospitals as often.

The implication of this study for governments, Hollander notes, is that more services and programs need to be designed to keep clients stable and supported at home. Programs should be developed to reduce the use of hospitals by home care clients, to provide community-based palliative care for the elderly to enable them to die comfortably at home and to provide quick, appropriate and effective care to re-stabilize clients at transition points. He also suggests that a standardized classification system for clients be adopted across the country to enable similar research in other jurisdictions.

"This discussion is not simply about reducing costs, it is also about improving the quality and delivery of services," said Hollander. "More seamless and integrated services can both benefit clients and reduce costs."

While this study indicates that home care can offer significant savings to government, Hollander stressed that it is not known yet whether the burden of costs is simply shifted onto the shoulders of clients and their caregivers. "This is an extremely important question that we are now examining in other studies in the research program," he said. Other studies in the National Evaluation of the Cost-Effectiveness of Home Care will use client logs, caregiver diaries, and interviews to detail all costs born by clients and their families, including the cost of time lost from work for family members.

For more information or to obtain a copy of the study's 200-page report, contact the National Evaluation of the Cost-Effectiveness of Home Care:

308–895 Fort Street
Victoria BC V8W 1H7
Tel. (250) 389–0123
Fax (250) 389–0105

E-mail: info@homecarestudy.com
Website: www.homecarestudy.com

An overview of the National Evaluation of the Cost Effectiveness of Home Care is available (in Adobe Acrobat format) at:
http://www.homecarestudy.com/downloads/overview.pdf

Photodyamic Therapy — Using Light to Kill Tumours

Canadian Cancer Society Funded Research Leads to Promising Treatment

A cutting-edge cancer treatment that uses light to kill tumours is being heralded as a major therapeutic option for cancer patients. The treatment — called **photodynamic therapy** (PDT) — has minimal side effects, can be given on an out-patient basis and has been curing some patients with early-stage cancer.

"Photodynamic therapy has successfully moved from the lab to the hospital and patients are experiencing the many benefits this treatment has to offer on a daily basis," says Dr. Brian Wilson — a driving force behind this research since the early '80's — at a Canadian Cancer Society media conference held at Toronto's Princess Margaret Hospital. "In many cases, patients are being cured through this treatment. In other cases, PDT is proving to be an effective addition to the more standard cancer treatments of surgery, radiation and chemotherapy."

Currently, the most successful applications of PDT — in which patients have a good chance to be cured — are for early-stage esophogeal cancer and a precancerous condition called Barrett's Esophagus. PDT is also showing great promise for treatment of skin, brain and early-stage lung cancer. Treatment by PDT also greatly improves the quality of life of some patients with advanced cancer.

At the heart of PDT is a class of drugs known as photosensitizers. "These drugs don't become active until exposed to light," explains Dr. Wilson, Head of the Division of Medical Biophysics at the Ontario Cancer Institute and Professor of Medical Biophysics, University of Toronto. "The drugs are 'picked up' by cancerous tissue, then they are activated by a light source. Once activated, the drugs generate chemicals that kill the cancer cells, either directly or by destroying the blood vessels supplying the tumour."

Dorothy Lamont, Chief Executive Officer of the Canadian Cancer Society and its research partner, the National Cancer Institute of Canada, says that "the Canadian Cancer Society is extremely proud to be providing the funding for Dr. Wilson's research, which is having such a profound effect on cancer patients."

PHOTODYNAMIC THERAPY, INFORMATION

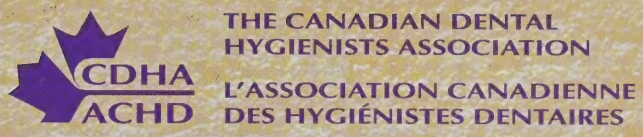
- At the heart of photodynamic therapy (PDT) is the use of light-activated drugs.
- Certain drugs (photosensitizers) are activated by light (usually red) to generate chemicals that kill tumour cells. The photosensitizers or light by themselves have no effect — only when they are used in combination are they effective.
- Photodynamic therapy presents a new approach for eradicating solid tumours. It can be used alone or in combination with other therapies: radiation, surgery or chemotherapy.
- Photodynamic therapy can be applied to many sites in the body (e.g. skin, lung, esophagus, brain, bladder, genital tract, etc.) by using optical fibers to deliver the light from a laser to the tumour.
- Canada is a world leader in PDT.
- Several internationally-known research groups in Canadian universities and medical research centres are studying PDT.
- QLT Phototherapeutics Inc., based in Vancouver, British Columbia, is the leader in developing the drug Photofrin and new second-generation drugs that are key to the success of photodynamic therapy;
- Canada was the first country in the world to approve PDT (in 1993).
- The majority of the research into PDT has been supported by Canadian research agencies. The Canadian Cancer Society has provided almost $2 million in funding for Dr. Brian Wilson's photodynamic therapy research since 1982.
- Using the drug Photofrin (QLT Phototherapeutics Inc., Vancouver, BC), PDT has been approved in several countries for different applications:
  - ~ recurrent bladder and esophageal cancers in Canada;
  - ~ certain lung cancers in the USA;
  - ~ several types of early cancer in Japan and various cancers in Europe.
- New technologies are being developed to further refine PDT including improving light generation, delivering light more accurately to the tumour or diseased tissue, and monitoring the treatment in individual patients.
- Dr. Wilson is studying ways to fine-tune dosing in PDT and to measure the effects of treatment at the earliest possible stage. "We want to be able to tailor treatment to the individual patient, then to check as soon as possible whether we've destroyed the tumour," he explains. "If we've missed a region, or if the response isn't going to be adequate, we'd like to know right away, so we can repeat the treatment on the spot, and get it exactly right."
- New photosensitizers with improved selectivity for disease are also being developed and tested in clinical trials. One major advantage of PDT is that it is so selective. Because just the cancer site is exposed to light, anti-cancer chemicals are only created within the tumour itself. As a result, photodynamic therapy kills only cancer cells, not healthy ones. This reduces side effects to a minimum. PDT patients do, however, remain light-sensitive for several weeks after treatment, and must avoid natural light or risk a sunburn-like reaction. Newer photosensitizers, now being studied by Dr. Wilson, may not even cause this unwanted effect.
- In combination with new early-detection methods, PDT helps achieve the strategic mission to 'search and destroy' tumours.
- PDT is set to become a major new form of therapy, with applications across many major types of disease.
- Several new drugs are under development and clinical trials are underway to test PDT for many different conditions in addition to cancer:
  - to control psoriasis and other skin diseases;
  - to prevent progression to blindness in macular degeneration;
  - to reduce the severity of rheumatoid arthritis;
  - to eliminate the need for hysterectomy in endometrial disease;
  - to prevent re-blockage of arteries after angioplasty for coronary artery disease.

Eat healthy
Play often
Repeat regularly

Regular physical activity and healthy eating reduces the risks associated with being overweight.

PARTICIPACTION®
www.participaction.com

CDHIP — CANADIAN DENTAL HYGIENISTS INSURANCE PLAN



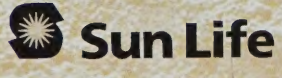
Canadian Dental Hygienists Insurance Plan (CDHIP)

The Canadian Dental Hygienists Association offers a comprehensive insurance plan specifically designed to meet the needs of, and to protect it's members.

CDHA members and their families can benefit from a unique insurance coverage tailored to their needs with the Canadian Dental Hygienists Insurance Plan (CDHIP). This plan includes coverage for:

- Disability Insurance or Life, Accidental Death and Health Care Insurance with Sun Life of Canada
- Commercial General Insurance or Error and Omissions Liability Insurance with F. Pigeon & Sons Insurance Brokers Ltd.
- Home and Automobile Insurance with Canada Life Casualty
- Retirement and Savings with Merrill Lynch

For in-depth information on any or all of these insurance benefits, please contact:



1-800-669-7921

J. Pigeon Insurance

1-877-264-1402

CANADA LIFE
Casualty Insurance Company

1-888-688-0000

1-800-563-6623

CDHIP — THE INSURANCE PLAN MADE FOR CANADIAN DENTAL HYGIENISTS

PROBING THE NET

By Karen Wolf, Dip.D.H.

Summer is finally here and I hope you will all enjoy your vacations. After a busy spring it will be refreshing to relax with family and friends either at home or away.

In my personal quest for knowledge I have come across two interesting and informative articles which sing the praises of the **Fluoride Varnish**.

> "Fluoride has been proven to be a deterrent to decay, both arresting and reversing the process of decay in children and adults. Fluoride delivery has been oriented towards balancing maximal caries prevention while minimizing the risk of fluorosis. The most effective means of fluoride delivery involve prolonged exposure of fluoride to the tooth enamel. Fluoride varnish delivers a concentrated amount of fluoride to a specific area. This makes it appear to be an ideal means of fluoride application."

The University of Texas is quoted as claiming that the use of fluoride varnish could reduce cavities by over 40% and could even reverse decalcified enamel by 51%.

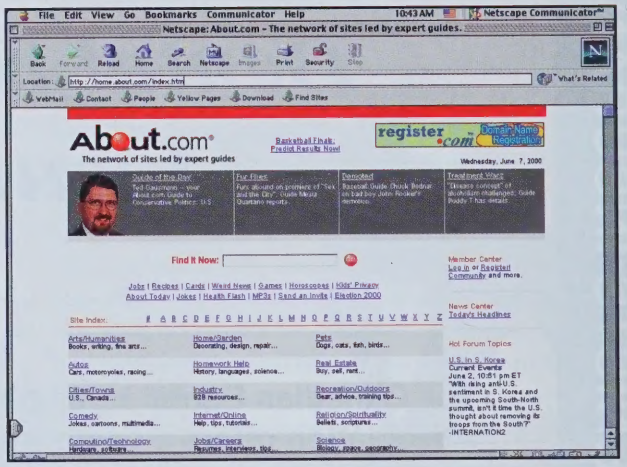
Check out these two articles at
http://home.about.com/index.htm

When you get to this site, type into the search box the words "fluoride varnish" and the first two articles are the ones to which I am referring.

Finally, I have searched and searched for good Internet sites to share with you as resource material that you could use for oral health education sessions you may conduct within your communities. The only address I have found that covers a wide variety of topics and has some interesting and unique information is **http://www.healthyteeth.org**

At this site you will be able to choose from topics such as prevention, cavities, teeth and gums, braces, experiments and activities, and teachers guide. I would suggest you check out the experiments and activities section if you are planning to present to the older elementary grades.

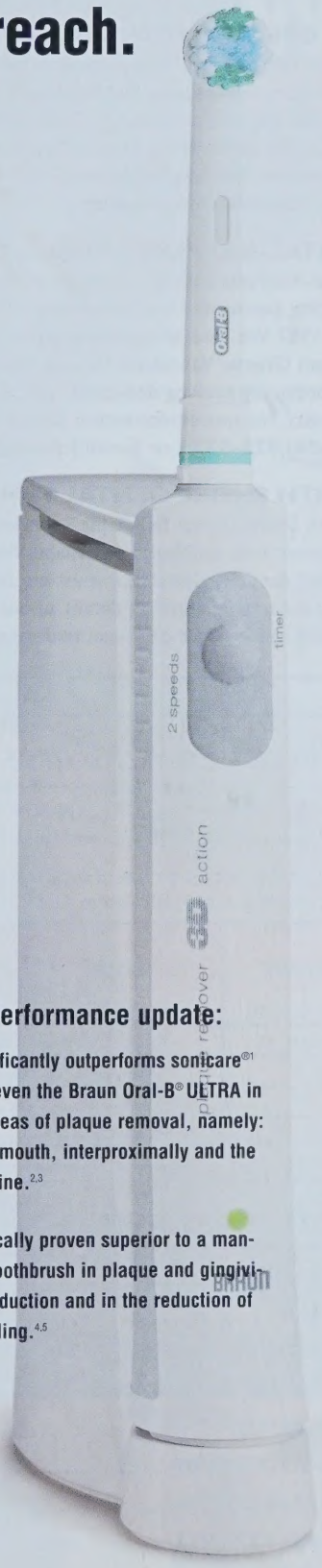
Until next time.



http://home.about.com

http://www.healthyteeth.org

Now deep cleaning is well within your reach.



Plaque Remover

Performance update:

- **Significantly outperforms sonicare®[1] and even the Braun Oral-B® ULTRA in all areas of plaque removal, namely: total mouth, interproximally and the gumline.[2,3]**
- **Clinically proven superior to a manual toothbrush in plaque and gingivitis reduction and in the reduction of bleeding.[4,5]**

1. Sharma, NC, *et al. Am J Dent 1998;* 11:S29-S33. 2. Ernst C.-P. *et al. Am J Dent 1998;* 11:S13-S16. 3. Driesen GM, *et al. Am J Dent 1998;* 11:S7-S11. 4. Cronin M, *et al., Am J Dent 1998;* 11:S17-S21. 5. Van der Weijden GA, *et al. Am J Dent 1998;* 11:S23-S28.

Braun and Oral-B are registered trademarks of Braun GmbH and Oral-B Laboratories respectively. sonicare is a registered trademark of Optiva Corp. © 2000 Oral-B Laboratories.

BRAUN

Oral-B

3D Plaque Remover Special Professional Trial Offer!

Buy One (1) Braun Oral-B® 3D for $80.00* and Get Another One (1) FREE!!

For $80.00* you will receive one (1) 3D Plaque Remover for you and one (1) 3D absolutely **FREE** to give to a family member, friend or colleague.

☐ Yes, please send me **two** Braun Oral-B 3D Plaque Removers at the Special Trial Offer of $80.00*.

☐ Also, send me replacement brushheads:

☐ Brush Refill EB 15-1	$ 9.99*	Card of 1	Qty: _____
☐ Brush Refill EB 15-3	$ 19.99*	Card of 3	Qty: _____
☐ *New!* Ortho Refill OD-15/1	$ 9.99*	Card of 1	Qty: _____
☐ *New!* Extra Soft Refill EB-15/3-S	$ 19.99*	Card of 3	Qty: _____
☐ *New!* 3D Travel Case	$ 7.50*	Unit	Qty: _____

To order, please complete the order form below and

FAX TO 1-800-420-3616

• No cover page required • Separate form for each office staff member required • Print/type clearly in black ink.

License #_____ I am a ☐ Dentist ☐ Dental Hygienist ☐ Dental Assistant

Name (required)

Dental Office Name

Dental Office Address

City/Town Province Postal Code

Office Telephone (required)

Office Fax # (required) e-mail Address

Dentist Signature (required)

All orders will be shipped and billed to the dental office account through your Oral-B dental dealer. My preferred dealer is:

☐ Ash Temple/Servident ☐ Sinclair Dental Co. ☐ Larr Sales
☐ Henry Schein Arcona ☐ Central Dental Supply ☐ Québec Dentaire
☐ Patterson Dental/Dentaire Canada Inc. ☐ Clift's Dental Supplies

Limited Offer: One (1) Professional Trial Offer of "Buy one (1) 3D @ $80.00* and Get Another Free" per practicing dentist, dental hygienist and dental assistant.

* Professional List Price. GST + Applicable Sales tax will apply. Offer expires December 31, 2000. Please allow 6-8 weeks for delivery after receipt of order. No orders will be accepted without the Dentist Signature.

PORT ALBERNI, BC

The opportunity exists for a qualified dental hygienist to join our friendly team in Port Alberni, BC. Our busy, family practice is looking for someone who is enthusiastic, self-motivated, fun-loving, with excellent communication skills. Emphasis is on perio, prevention, and soft tissue maintenance. Please fax your resume to **(250) 724–3341** or mail it to: **Dr. H. Sperber Suite 101–4115 6th Avenue, Port Alberni BC, V9Y 4N1**

WWW.DENTAL-LOCUMS.COM

www.dental-locums.com is a free service which connects practices, dentists and dental hygienists for long and short term job positions. An online form allows you to list your details or you can fax them to **(604) 922–8407**. Practices or individuals can also have their own page linked to this site.

YOUTH EXCHANGE PROGRAM AGES 18–30, SWITZERLAND

We are looking for a full-time dental hygienist in a preventive oriented dental practice. If you are single, right-handed, under the age of thirty, enjoy traveling and are willing to make a one year commitment please contact us. Our staff is English speaking. We offer excellent working conditions: USA Infection Control Standards. Furnished apartment available. Benefits include: 6 weeks paid vacation, 13 monthly salaries yearly, professional liability, sick pay and accident insurance.

Canadian or US license accepted. Knowledge of or willingness to learn German expected. We value friendliness, caring for clean and careful treatment. Send resume to: **PO Box 63, 4125 RIEHEN 1. BS, SWITZERLAND** or fax: **011 41 61 641 61 68**

COFFS HARBOUR, AUSTRALIA

A long-established, high-achieving dental practice seeks the services of an enthusiastic, adaptable, intuitive, well-groomed dental hygienist to become part of our quality-orientated team. Pay is based upon relative experience and is negotiable. 32 hours per week. If you are caring, dependable, have good communication skills and would like to enjoy the most comfortable climate in Australia while working in a modern, state-of-the-art environment, please send your resume with a hand-written cover letter to: **The Practice Manager, No 1 Riding Place Coffs Harbour, NSW, Australia 2450** or **E-mail: happ@midcoast.com.au** or telephone: **011612 66525400**, After hours **011612 66534433** Information on Coffs Harbour at **www.holidaycoast.net.au**

PORT COQUITLAM, BC

People-oriented dental hygienist needed to enhance established hygiene program. General family practice located close to the highlights of Vancouver, but nestled in the quiet suburb of Port Coquitlam. Pleasant work environment with friendly staff. Office hours are Monday to Thursday, with no evenings. Salary, benefits, and starting date negotiable. Please contact **Marilyn or Linda at: Dr. R. Bortolussi, 6–1449 Prairie Avenue, Port Coquitlam BC, V3B 1S9**. Days: **(604) 941–7600** evenings or fax: **(604) 944–0089** E-mail: **robert1244@home.com**

QUEEN CHARLOTTE ISLAND, BC

Join our fun family practice in the Queen Charlotte Island, BC. Enjoy great outdoor recreation and the warmth of our close community. Equipment includes cavitron, Statim, panores, overhead TV with intraoral camera & Casey patient education. Join our staff that's more like a family. Come and make a difference. Call **Leslie collect @ 250–559-8384.**

CHATHAM-KENT, ON

Established mobile dental hygiene practice for sale. Serving an expanded client base in long-term care. Great profit potential, income expanding yearly, service in high demand. For inquiries, contact **Samaritan Senior Dental Service**. Fax: **(519) 352–1639** E-Mail: **ssds.lambier@sympatico.ca**

JOB OPPORTUNITIES IN SWITZERLAND

Do you like to travel? Many openings for adventurous dental hygienists in Switzerland. Good salary, 4 weeks paid vacation. One year experience an asset. Contact me for more information. **Pia Kolliker — Dental Hygienists Overseas, Placement Service**. Telephone **(250) 493–8827**, E-mail: **riehenbc@home.com**

DENTAL-AID PERSONNEL, BC

Dental-Aid Personnel is a professional staffing service providing, permanent and temporary relief to Dental offices since 1987. We have an extensive growing client base reaching from Greater Vancouver through the Fraser Valley and are continually seeking dedicated and professional dental hygienists. For more information, phone **(604) 524–3904**, fax **(604) 925–9223**, or E-mail **jchung@planeteer.com**

NORTH SHORE DENTAL TEMPS INC., BC

"North Shore Dental Temps Inc." services the entire Greater Vancouver area and Vancouver Island. We are looking for qualified dental hygienists for a variety of part time and full time positions. For further details, phone **(604) 990–8777**, fax **(604) 990–8762** or E-mail **nsdentaltemps@telus.net**

Classified Ad Rates

Fifty (50) words or less, $25.00 (plus 7% GST).
Additional words: $0.50 per word (plus 7% GST).

Closing date for the receipt of copy is approximately one month prior to publication date:

DEADLINE	ISSUE	CIRCULATION DATE
December 10	January/February	January 15
February 10	March/April	March 15
April 10	May/June	May 15
June 10	July/August	July 15
August 10	September/October	September 15
October 10	November/December	November 15

Advertisers' Index

BUTLER ..... IFC
CDHIP 155
COLGATE 124
D-SHARP 145
HU-FRIEDY ..... OBC
KNOLL PHARMA 140–141
ORAL-B ..... TOC, 143, 157
PERIO REPORTS 139
SULCABRUSH ..... IBC
TELEDYNE WATERPIK 128

Sulcabrush® Inc.

Get a handle on healthy Gums™ !

NOW Available at:

WAL-MART®

WE SELL FOR LESS *every day!*

Photocopy this page, cut here | place this reply card in an envelope and mail to the address below.

Please send me **FREE COUPONS** to present to my patients to help them identify and purchase the ***Sulcabrush®*** at **WAL-MART**.

Free *Sulcabrush travel* when your patients shop at **WAL-MART** (Details on coupon - Offer expires March 31/01)

DDS Name _____

RDH Name _____

Home ◄(Circle one only)► Dental Office

Address _____

City _____

Province _____ Postal Code _____ Tel: _____

1 800 387 8777

16 Brisbane Road, Downsview
Ontario, Canada M3J 2J8

YIELD

MERGING QUALITY AND SHARPNESS

When you're searching for the highest quality scalers, all signs lead to Hu-Friedy. Hu-Friedy scalers are the sharpest in the business, and they stay sharp longer. In fact, dental professionals use more Hu-Friedy scalers than all other brands combined. So take the high road, and follow the leader.

HU-FRIEDY DENTAL

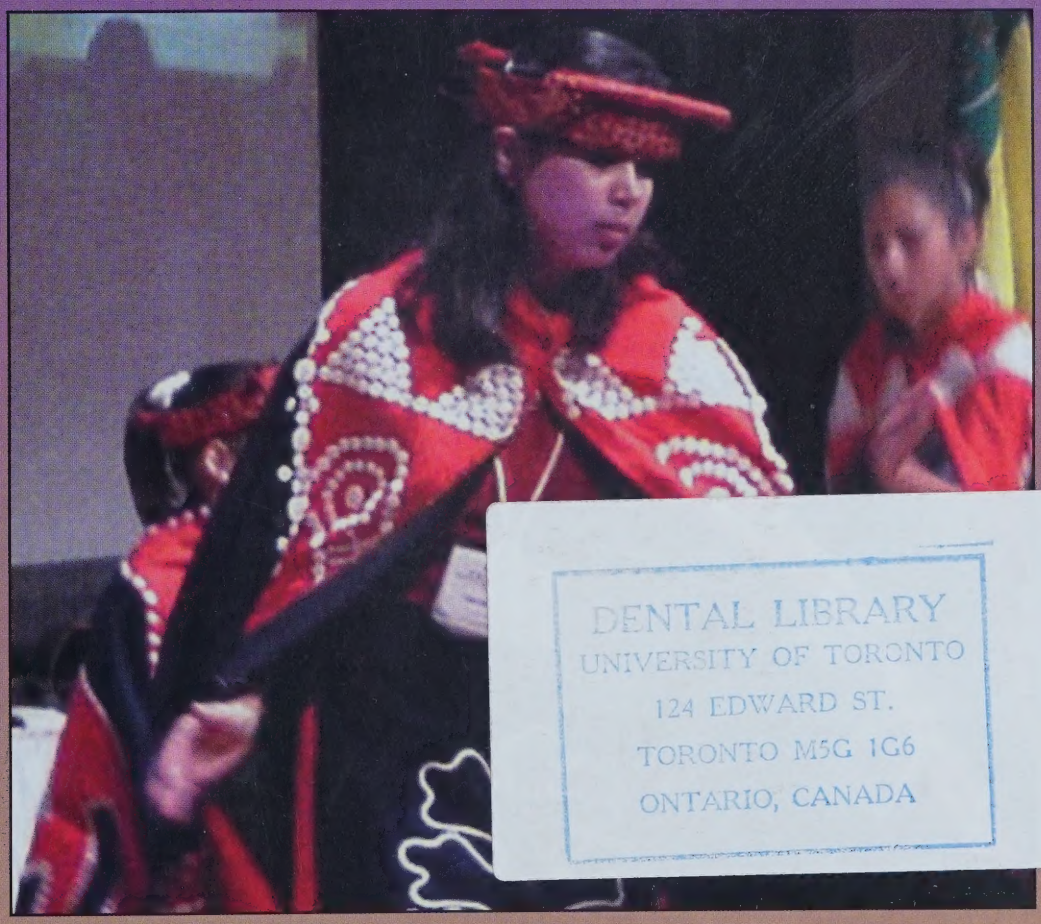
To order, contact your dealer, or call 1-800-HU-FRIEDY

The Canadian Dental Hygienists Association

PROBE JOURNAL

de l'Association canadienne des hygiénistes dentaires

September/October 2000 vol. 34 no. 5

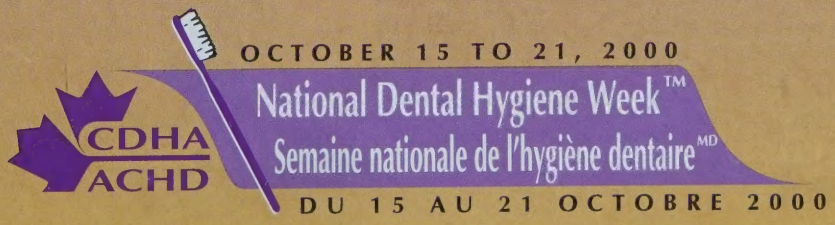


DENTAL LIBRARY
UNIVERSITY OF TORONTO
124 EDWARD ST.
TORONTO M5G 1G6
ONTARIO, CANADA

Speaking of Honour

Highlights From the 11th Annual CDHA Professional Conference

International Reports



BUTLER G-U-M

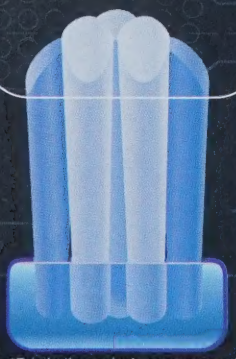
Micro Tip™ Toothbrush

Bristle design so advanced, it's tough on plaque but *gentle* on gums.

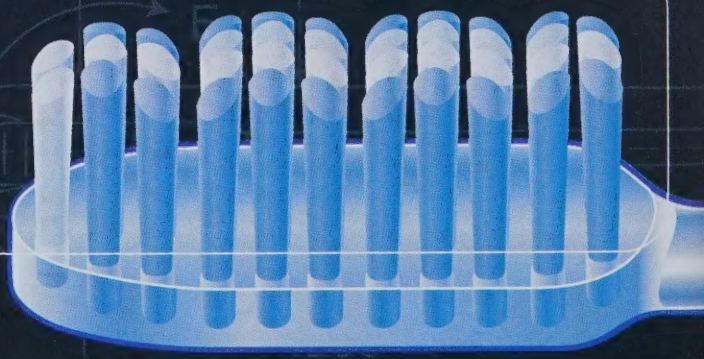
And *here's* why:

Innovative Micro Tip bristle technology increases bristle tips by 100% and is designed to gently clean the occlusal fissures, interproximal spaces and gingival crevices.*

The raised centre row bristle design is clinically proven to reduce plaque below the gumline.**



Unique interdental trim aligns with the tooth profile for gentle interproximal cleaning.



For more reasons, call 1-800-265-8353

www.jbutler.com

BUTLER G-U-M

Experts in Oral Care

*Bristle tip analysis compares a Regular size, Soft Micro Tip™ toothbrush to a Regular size, Soft Super Tip® toothbrush.
**Clinical data based on a study conducted at State University of New York at Buffalo. Data is available upon request.

Dialogue Between Outgoing and Incoming Presidents

Lynda McKeown, Dip.D.H., HBA, MA

Lynda: Well, Salme it is time for you to take the 'helm.'

Salme: Lynda, your term as chair of the Board of Directors and president of CDHA is complete. Any memorable moments?

Lynda: Yes Salme, but space limits the list:

- I really do like organizational dynamics so it has been fun to watch the Board of Directors 'gel.' Each Board member is a unique individual bringing opinions and provincial concerns. Like the different instruments in an orchestra we harmonized our efforts for policy development: "advancing the profession, supporting members and contributing to the health and well-being of the public."
- Central Office staff is helpful and supportive in administering Board policies.
- Colleagues recognized outgoing Executive Director Carol Matheson Worobey for her leadership in the growth, development, and evolution of the CDHA.
- CDHA's search for a new Executive Director is successful.

You heard colleagues speak in Victoria, to matters Salme, that will carry on in your term?

Salme: Yes, I did Lynda. The meetings we held with provincial presidents, executive directors, and registrars of Associations and Regulatory Bodies were informative. What a wonderful opportunity to network, exchange ideas and get 'a sense of' various issues and concerns across Canada. Also it came across 'loud and clear' at the Town Hall meeting that members want to continue the National Conference in its present format.

Lynda: They sure were clear about that matter, Salme. Evidently, colleagues work diligently to plan and implement a successful conference. Probably get lots of colleagues working on this project and no other. For some it will be their first time at a national meeting.

Salme you heard also portability in Canada remains a challenge.

Salme: Yes, I did Lynda. It is expensive to maintain multiple registrations but necessary at this time, for colleagues 'on the move.'

Lynda: Another thing that will 'stand out' in my memory Salme is the fact that Esther Wilkins' research for a presentation in Quebec helped me become more aware about dental hygiene issues in Canada. For instance Salme, I have taken it for granted that the National Dental Hygiene Certification Board exam can be written in French or English. Although we have our challenges, we are unique in this bilingual country.

Salme I see that you and I both shared with the Americans the fact that Canada has approximately 14,000 dental hygienists, about 9,600 are members of the CDHA. The Americans applauded when I said that about 10,000 dental hygienists in Canada are in self governing jurisdictions. (I added that even with a voice we have challenges).

Salme your experiences studying and working on both sides of the border will be beneficial as CDHA supports international initiatives. Do you remember how excited the American representatives were at our May meeting in Ottawa about the forth coming Surgeon General's Report?

Salme: Yes!

Lynda: Well, I have seen the executive summary (copies available from Central Office) and understand their excitement. For the first time ever it is a Report on Oral Health in America. In an introduction Donna Shalala, Secretary of Health and Human Services USA government states:

> *"oral health is integral to general health… oral health means more than healthy teeth… ignoring oral health problems can lead to needless pain and suffering, causing devastating complications to an individual's well-being with financial and social costs that significantly diminish quality of life."*

In his preface to the Summary, Surgeon General David Satcher MD, Ph.D. says:

> *"We know that the mouth reflects general health and well-being. This report reiterates that general health risk factors common to many diseases, such as tobacco use and poor dietary practices, also affect oral and craniofacial health."*

Salme: Lynda, those points apply globally. Also, the 'framework for Action' includes policies that the CDHA has been pursuing:

- change public perceptions so the public understands the meaning of oral health and the relationship of the mouth to the rest of the body
- change policy makers' perceptions by informing the legislators
- change health providers' perceptions so all health care providers contribute to enhancing oral health.

Lynda: Well, Salme as you take over the helm, it must be nice to know that oral health care professionals have commonalties. The mouth is not just teeth and gingiva, but a center of vital tissues and functions, critical to general health and well-being.

Readers 'stay with the ship.' Give Salme your support.

Colleagues, thanks for the memories!

NEW!

Colgate* ACTIBRUSH™

An exceptional clean your patients can afford.

The oscillating head action is clinically proven to give a superior clean to an ordinary toothbrush. And because Colgate Actibrush is battery powered, there are no plugs, no cords and no recharging. It Is truly portable.

- Long slim neck for effective access to posterior regions.
- Small round head with soft bristles for individual tooth cleaning.
- 4,000 oscillations per minute for highly effective cleaning.
- Long battery life provides approximately 250 uses.
- Replacement heads available.
- Solid but lightweight handle and comfortable to hold.

To order
or for more information
call Colgate at 1-800-225-3756

*TM Reg'd Colgate-Palmolive Canada Inc.

CONTENTS

Vol. 34 No. 5 – 2000

163 PRESIDENT'S MESSAGE

Dialogue Between Outgoing and Incoming Presidents
By Lynda McKeown, Dip.D.H., HBA, MA

167 GUEST EDITORIAL

Speaking of Honour!
By Fran Richardson, RDH, B.Sc.D, M.Ed., Dip.Min.

168 NEWS

INTERNATIONAL REPORTS

171 Smiles from the Dominican Republic
By Karen Sawarna, Youth Intern with Sonrisas

172 Dental Volunteers for Israel (DVI)
By Sandra Jennings, RDH

173 Guatemala: Blood, Sweat, and Tears
By Donna Kittle, B.Sc., RDH

177 An Update From Hungary
By Margit Juhasz, RDH

178 Reaching Out... Dental Hygiene Efforts in Bolivia
By Heather Pernisie, RDH and Tara Pshebnicki, RDH

182 Dental Health Project in South Lebanon
By Beverley Timgren, RDH

183 Benefits and Effect of a Six-Year School-Based Fluoride Mouth Rinse Program
Antoine Y. Choufani, DCD, DU; Bassel H. Doughan, DCD, MPH; Mounir A. Doumit, DCD, DSO; Department of Dental Public Health — Lebanese University, Beirut-Lebanon; Beverley Timgren, RDH

INFORMATION

187 Upcoming Events

188 Member Communication with CDHA

Letter to the Editor

189 UBC Dental Hygiene Update — Part-time Distance Education for Dental Hygiene in Canada

DENTAL ABSTRACTS

190 Avoid Brushing Teeth Immediately After Exposure to Erosive Food/Beverage

Impaired Sense of Taste and Smell in the Elderly

191 NHANES III Data Lend Further Support to Connection Between Periodontal Disease and Heart Attack

194 HIGHLIGHTS FROM THE 11TH ANNUAL CDHA PROFESSIONAL CONFERENCE 2000

Partnerships in Health — Broaden Your Professional Horizon

198 CLASSIFIEDS

Oral-B® The Brand More Dental Hygienists Use Themselves.

MANAGER, COMMUNICATIONS SERVICES: Angela J. Whelan, B.A.
EXECUTIVE DIRECTOR: C. Matheson Worobey, Dip.D.H.
EDITORIAL ADVISOR: K. Edwards, M.A.
CONTRIBUTORS
Leanne Carlson-Mann, Dip.D.H., Dip.D.T.
Carol Barr Overholt, Dip.D.H., B.Ed.
Karen Wolf, Dip.D.H.
EDITORIAL BOARD
B. Fortune, Dip.D.H.
R. Lunn, Dip.D.H.
L. MacDonald, Dip.D.H., B.Sc.D., M.Ed.
J. Waites, Dip.D.H.
DESIGN: Edels-Marcotte
Published six times a year, Jan./Feb., Mar./Apr., May/June (Scientific Issue), July/Aug., Sept./Oct., Nov./Dec. (Scientific Issue), by the Canadian Dental Hygienists Association,
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Tel (613) 224–5515

Canada Post Publications Mail Registration No. 09877
CANADIAN POSTMASTER: Notice of change of address and undeliverables should be sent to:
Canadian Dental Hygienists Association
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Subscriptions $75.00 (GST Included) in Canada, $125.00 Cdn for US and $130.00 Cdn elsewhere. Fifty cents per issue is allocated from membership fees for journal production. All statements are those of the authors and do not necessarily represent the CDHA, its Board, or its staff.
ADVERTISING AND SUBSCRIPTIONS:
Keith Health Care Inc.
1599 Hurontario Street, Suite 104
Mississauga, ON L5G 4S1
(905) 278–6700
CDHA 2000
6176 CN ISSN 0 834–1494
GST Registration No. R106845233

CDHA CENTRAL OFFICE STAFF
Executive Director: Carol Matheson Worobey
Manager, Communications Services: Angela J. Whelan
Manager, Finance and Administration: Monique Belleau Rock
Manager, Member Services: Sandra VanWart
Member Services Assistant: Louise Lalonde
Administrative/Executive Assistant: Shelly Minnie
Receptionist/Information Clerk: Francine Fortin
All CDHA members are invited to call the CDHA's Member Line toll-free, with their questions/inquiries:
1–800–267–5235, Fax (613) 224–7283
Internet: http://www.cdha.ca E-mail: info@cdha.ca
We look forward to serving you.

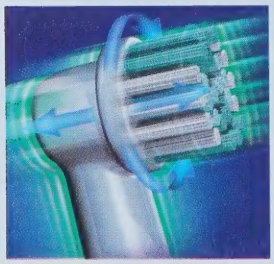
The Canadian Dental Hygienists Association's Journal, *Probe*, is the official publication of the CDHA. The CDHA invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to *Probe* do not necessarily represent the views of the CDHA, nor can the CDHA guarantee the authenticity of the reported research. Copyright 1999. All materials subject to this copyright may be photocopied for the non-commercial purpose of scientific or educational advancement.

Expect less from your patients.

Better plaque removal at home means better results in your office

Cleans like no other brush in the world.

The Braun Oral-B 3D is the only power toothbrush that combines two distinct brushing motions: gentle in-and-out pulsations to loosen plaque from deep between the teeth and below the gumline, and side-to-side oscillations to sweep it away. The result? Significantly better plaque removal than a manual toothbrush.[1, 2]



The better way to better results.

In a long-term practice-based study involving more than 16,000 patients, participating dentists reported that more than 80% of patients using a Braun Oral-B Plaque Remover* had noticeable improvement in oral health.[3]

The right recommendation.

No other toothbrush in the world cleans like the Braun Oral-B 3D, which is why there's no better brushing method—power or manual—to recommend to your patients. The Braun Oral-B 3D—pulsates deep to clean better.

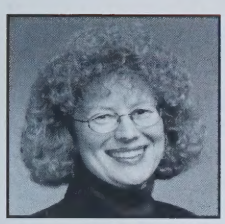
BRAUN

Oral-B®

For more information, or to order yours at a professional trial price, please contact your authorized dental dealer or call us at 1-800-268-5217. Visit our web sites at www.braun.com and www.oralb.com.

*Braun Oral-B Ultra.

References: 1. Cronin M, et al. *AmJDent* 1998;11:S17-S21. **2.** Van der Weijden G.A., et al. *AmJDent* 1998;11:S23-S28. **3.** Warren PR, et al. *JADA* 2000;131:389-394.



Speaking of Honour!

By Fran Richardson, RDH, B.Sc.D, M.Ed., Dip.Min.

This is an editorial about honour! Naturally I was honoured to be nominated for the CDHA Life Membership — to my nominators, thank you. The honour increased when the CDHA Board voted to bestow the Life Membership. It was then an honour to receive the award in the presence of friends and peers at the CDHA Professional Conference in Victoria, June 2000. To receive recognition from one's peers is probably the most meaningful of all honours.

(The Americans lose something in their treatment of the word "honour" when they remove the "u" and spell it "honor"; for the "u" enables us to see the "our" component within its meaning).

To say that one can achieve anything by ones self negates the basics of humanity that says we are at our best, and worst, a social species. Many who choose to enter the dental hygiene profession are "people-persons" — people who want to make a difference be it one-on-one or collectively. But where do our leaders come from? What makes a leader lead? What are their characteristics? There have been times throughout history when a leader has emerged when needed most, but none of us would have been where we are today if that special someone hadn't been there to mentor us!

Many years ago — 18 to be exact, a leader emerged in the dental hygiene field. This was at a time when the profession needed to be organized into an effective national voice, a time when it became apparent that the CDHA needed a strong voice and strong leadership to move the profession forward. The CDHA President of the day was Linda Berry from Toronto, who had the foresight to hire as CDHA Executive Director a Saskatchewan native, a 1966 dental hygiene graduate from the University of Manitoba and past president of CDHA, who had recently relocated to Ottawa with her husband and infant son. Carol Matheson Worobey moved to Ottawa having been involved in private practice, community health and dental assisting education at both Kelsey Institute in Saskatoon and Red River Community College in Winnipeg. As happens with many potential leaders, Carol was in the right place at the right time. CDHA now had an Executive Director with vision for the profession, a knack for working well with diverse personalities, a keen sense of humour and a heart that beat for the recognition of oral health as an integral component of the health care system.

Carol Matheson Worobey
CDHA Executive Director
1982–2000

Over the years Carol has worked with 18 CDHA Presidents, been involved with three Board reorganizations and has mentored countless numbers of dental hygiene volunteers. She accomplished this by maintaining her focus on where dental hygiene was to be 5, 10, even 15 years in the future. Boards and Presidents have come and gone but Carol has maintained the organization with class and perseverance. The Executive Director brings stability to an organization — maintains the history — and facilitates the decisions made by the Board of the time. It is a delicate balancing act.

A true mentor is one who mentors for the love of it; not for personal gain but because they see the potential in their protégé; they see that someone else can carry on "the torch" and truly contribute to the future.

As one of the past Presidents (1993–1994), I can honestly say that without Carol's mentorship throughout my career that I may not have had the courage to take risks, to be a pioneer within our field (other people's comments, not my own), to make a difference. A true mentor is one who mentors for the love of it; not for personal gain but because they see the potential in their protégé; they see that someone else can carry on "the torch" and truly contribute to the future.

In our fast paced world, many of us want instant gratification and instant results. We aren't content to nurture a person or even an idea; we want it all, we want it now and we want it done our way! Time has become the enemy, everything moves too quickly — time is money. And because of this we often don't take the time to mentor a successor, to nurture the vision or to think things through before acting.

Carol Matheson Worobey, CDHA Executive Director, is retiring on **December 31, 2000**. She has presided over the growth and maturation of our national organization. She has brought honour and dignity to the dental hygiene profession in an atmosphere of significant change. Without her leadership, knowledge and "friendly" persuasion, the various Boards with whom she has worked could not have accomplished their goals. During her time as Executive Director, CDHA has become an integral member of HEAL (Health Action Lobby), has met with federal Ministers of Health and Finance and participated in countless national health forums.

True, everything didn't always go as planned or as expected — but that is what makes life interesting! When Carol retires it will be the close of an era. The dental hygiene profession will continue to move forward, in a new direction. The time for change is ripe. Carol's successor has big shoes to fill! All of us wish Carol well in her "retired" life and dental hygienists across the country look forward to working with whomever the Board chooses to administer the organization.

In this time of change it is an honour to be a dental hygienist, a life member of the CDHA and to have a friend and mentor such as Carol Matheson Worobey. The future is upon us; but we need new, fresh leaders. They are out there.

Be a mentor — leave a legacy! ***Carol has***!

Campaign 2000 Report

Get Ready for National Dental Hygiene Week™

It's that time of year again — time to take special pride in our profession and show Canadians everything we do to help them keep talking, eating and smiling for a lifetime.

National Dental Hygiene Week™ (NDHW) takes place from **October 15th to 21st, 2000**. The Canadian Dental Hygienists Association and our Provincial Partners are working together to bring you the best event ever. This year, you'll have even more tools to reach Canadians in a powerful and effective way. We've developed advertisements, public service announcements, a handy toolkit to plan NDHW™ in your community, as well as great new tip sheets to hand out to your clients.

National Dental Hygiene Week™ 2000 focuses on dental hygienists' vast scope of work. Canadians should know we do more than just clean teeth! We play an important role in the maintenance of overall health, offering information and advice on the links between oral health and the body's *total health*.

Our profession will be promoted with **bold, new advertisements** in two of Canada's premiere news magazines — *Maclean's* and *L'actualité* — read by millions of influential Canadians. The ads will appear in the **October 16th** issue of *Maclean's* (out on the stands as of October 9th) and in the **October 15th** issue of *L'actualité* (available as of September 29th). Don't forget to pick up your copy and display it proudly!

The campaign also includes a **national public service announcement** (PSA), produced in both English and French, with the potential to reach hundreds of thousands of Canadians. The PSA will be distributed to more than 430 radio stations across the country. The stations will be encouraged to run the PSA not only during NDHW™ but throughout the year.

Another important element of the 2000 campaign is the **Campaign Planning Kit — *A guide to promoting National Dental Hygiene Week*™**. The Kit, which is being tailor-made for and distributed to each province, offers easy-to-use tools and tips on how to make the most of NDHW™. A section in the Kit has been created especially for individual members, with samples and how to's, so that each of you can promote the Week in your community. You can download it from the CDHA Web site at **www.cdha.ca**

One of the most unique tools we have created for this year's campaign is a series of **Consumer Tip Sheets**. Written by members of the National Planning Committee, the Tip Sheets position dental hygienists as true professionals, providing information about the links between oral health and conditions such as lung and heart disease, oral cancer and diabetes (specific topics to be announced). The Tip Sheets are designed to look like prescription pads. Dental hygienists can hand them out to clients to provide valuable information. There's even a space for you to make specialized oral health recommendations. Order your Consumer Tip Sheets today. A NDHW™ order form was mailed to all members in early September. You can also

CAMPAIGN 2000...*continued on page 192*

CDHA Board of Directors Guiding Principles

Outcome of the Board of Directors Meeting — June 2000

The board of Directors of the Canadian Dental Hygienists Association (CDHA) held a teleconference meeting on June 17, 2000. One key outcome of this meeting was the approval of Guiding Principles for the CDHA Board of Directors. They include:

1 We conduct ourselves professionally and ethically.
Professionalism and Excellence
- We operate with professional and ethical excellence.
- We strive for excellence through on-going improvement.
- We are visionary with a purpose of advancing the profession of dental hygiene (we are proactive).

2 We strive for excellence through ongoing improvements.
Accountability through policy governance
- We support and are accountable financially and strategically to members.
- We conduct business in a business-like fashion according to agreed upon policies.
- We respect diversity among our members.

3 Our policy leadership guides our decision-making.
Strong, collective leadership
- We govern in a responsible and dynamic manner.
- We govern as a cohesive unit and speak with a collective voice.

4 Collective leadership: We speak with one voice.
Dignity, fairness and respect
- We treat people fairly, equitably and justly.
- We treat members, individuals and others with dignity, respect and fairness.
- We treat others with dignity.
- Everyone is equal.

5 We are equal: We honour ourselves and treat one another with dignity, respect and fairness.
We honour ourselves and others.
- We respect ourselves and others.
- We are open and open-minded
- We conduct ourselves with dignity.
- We share with others.

WE ARE GROUNDED IN RESPONSIBILITY AND ACCOUNTABILITY TO OUR MEMBERS, COLLEAGUES, AND OURSELVES.

CDHA ACHD
THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES
Colgate Oral Pharmaceuticals

CDHA/Colgate Community Health Award

The Canadian Dental Hygienists Association (CDHA) in conjunction with Colgate Oral Pharmaceuticals, a subsidiary of the Colgate Palmolive Company, is proud to announce the CDHA/Colgate Community Health Award.

Dental Hygienists Volunteering in Their Community

This award program recognizes CDHA members and individuals who have implemented significant community **volunteer** *programs that focus on preventive oral health care.*

AWARD

The first-place award recipient will receive a commemorative award, a $3,000 donation, plus travel and hotel accommodations to the CDHA Annual Conference for one representative.

SELECTION

Selection will be conducted by the CDHA Community Health Award Committee. Committee decisions will be final.

RULES

Award recipients will be notified immediately following the selection. Presentations of the winner will be made at the CDHA Annual Conference.

ELIGIBILITY

Eligibility is limited to CDHA members.

- Community projects are those that document a community need and have specific measurable objectives.
- Community programs must involve **volunteer** dental hygienists and may include other members of the oral health care team.
- Examples of community projects are
  - Underserved populations
  - School programs
  - Programs for special populations
  - Media public information programs
- Any component or member or group of members responsible for implementing a volunteer community program concerned with some aspect of preventive oral health may submit an entry.
- The number of entries is not limited. An entry may be submitted by an individual, a group of individuals or a component; however, duplicate entries submitted will not be considered.

INELIGIBILITY

The CDHA/Colgate Community Health Award was created to recognize the volunteer efforts of CDHA members.

Examples of ineligible entries would be

- Entries/projects which allow students to fulfill scholastic requirements.
- Entries/projects in which participating dental hygienists are paid a salary for any portion of the entry/project.
- Entries/projects submitted by an employee or family member of the Canadian Dental Hygienists Association (CDHA), the CDHA Community Health Award Committee, the Colgate-Palmolive Company or its subsidiaries.
- Entries/projects for out of country programs.

SUBMISSION OF ENTRY

- All entries must be accompanied by a signed application available from the CDHA Central Office.
- All entries must be received in the CDHA's Central Office no later than **Friday, December 15, 2000**.
- A description of not more than 2–3 typewritten, double-spaced pages, including a 100-word summary, must be submitted along with the supporting documentation.
- Information on the amount and source of program funding, as well as how the money will be used, must be included.
- Personal job descriptions, resumes, and/or curricula vitae should not be submitted.
- Entry materials must be typed or printed.
- Entry materials will not be returned.

The deadline for applications is Friday, December 15, 2000. The recipient of the grant will be notified by Friday, March 15, 2001 and will have one year to implement the initiative. Entire entries must be received in the CDHA's Central Office.

Please send to: Canadian Dental Hygienists Association, 96 Centrepointe Drive, Ottawa ON K2G 6B1

2000 CDHA/Colgate Community Health Award

Congratulations are extended to Judy Lochhead as this years' 2000 CDHA/Colgate Community Health Award recipient. Ms. Lochhead was presented with the award at CDHA's 11th Annual Professional Conference by Colgate representative Tessie Lamadrid Black, Dental Hygiene Relations Manager.

As recipient, Judy's project will focus on the need for care in the institutionalized elderly population. Her project, entitled the "Southwestam Dental Health Project" will begin to address the need by providing inservicing to staff and caregivers of the residents of eighteen long term care facilities in the southwestman region.

Tessie Lamadrid Black of Colgate Pharmaceutical presents Judy Lochhead with this year's CDHA/Colgate Community Health Award during CDHA's Annual Conference in Victoria.

CDHA ACHD Oral-B

SECOND CALL

CALL FOR APPLICANTS

CDHA/Oral-B Graduate Student Research Award

OBJECTIVE: To promote the research training of Canadian dental hygienists in research oriented Masters or Doctoral programs.

GENERAL DESCRIPTION: An award of $5,000 will be given annually to a highly qualified candidate enrolled as a graduate student in a Masters of Doctoral program.

ELIGIBILITY: Applicants for this award must be Canadian dental hygienists who are active, associate, student or life CDHA members, in good standing, who may be studying full or part time. Applicants must present evidence of having been accepted by a recognized academic institution.

APPLICATIONS: The deadline is **December 15, 2000**. Applications must be submitted on forms available from CDHA's Central Office.

DURATION: This award is made for one academic year for full-time students or the equivalent for part-time students. The award may be renewable for one additional academic year or its equivalent on receipt of a satisfactory progress report. The progress report must detail work to date and include any pre-prints or reprints arising from the work. Any request for renewal of this award should be accompanied by a letter from the research supervisor and one other referee.

CONDITION OF SUPPORT: On completion of the studies, recipients of this award agree to provide a bound copy of the thesis or project to CDHA's Central Office.

CALL FOR APPLICANTS

CDHA/Oral-B Dental Hygiene Research Grant

OBJECTIVE: To support Canadian dental hygienists engaged in research that enhances the dental hygiene profession's ability to promote health and well-being.

GENERAL DESCRIPTION: A grant of $5,000 will be awarded annually to a Canadian dental hygienist involved in qualitative or quantitative research as a principal investigator or co-investigator. Preference will be given to research projects relevant to discipline of dental hygiene and the goals of the CDHA.

ELIGIBILITY: Applicants for this grant must be academically qualified Canadian dental hygienists who are active or life CDHA members in good standing. Evidence of academic credentials at the Masters and/or PhD level is required.

APPLICATIONS: The deadline is **December 15, 2000**. Applications must be submitted on forms available from CDHA's Central Office.

CONDITION OF AWARD: On completion of the research project, recipients of this grant agree to provide a written report for the *Probe* or reprints of journal articles to CDHA's Central Office

For further information and/or an application form for the CDHA Dental Hygiene Research Grant, or the CDHA Graduate Student Research Award, contact:

Canadian Dental Hygienists Association
96 Centrepointe Drive • Ottawa, ON • K2G 6B1 •
Telephone: (613) 224–5515 • Facsimile: (613) 224–7283

International Federation of Dental Hygienists (IFDH)

The IFDH has chosen *The Dental Team-Colleagues in Oral Health* as the theme for the 15th International Symposium on Dental Hygiene (ISDH), August 2nd–5th, 2001 in Sydney, Australia. The Scientific Program of *The Dental Team-colleagues in Dental Health*, will discuss: the evolution of the role of the dental hygienist from that of auxiliary to one of colleague; from the traditional to the non-traditional role; and the future delivery of preventive oral care. The program will cover all aspects of dental hygiene practice from training, education, research, community, outreach environments and aid to developing countries. Whatever your interest, there will be something valuable for everyone.

For further information, please contact:

15th IFDH Symposium Secretariat,
GPO Box 2609,
Sydney NSW 2001 Australia
Telephone: (+61 2) 9241 1478
Fax: (+61 2) 9251 3552
E-mail: reply@icmsaust.com.au

SYDNEY AUSTRALIA 2001
15th INTERNATIONAL SYMPOSIUM ON DENTAL HYGIENE
2-5 AUGUST 2001

In keeping with the upcoming IFDH Symposium, CDHA is pleased to present reports of Canadian dental hygienists contributing around the world.

Smiles from the Dominican Republic

By Karen Sawarna, Youth Intern with Sonrisas

While vacationing in the Dominican Republic almost ten years ago, Elina Katsman, a canadian registered dental hygienist (RDH), noticed that many poor Dominican children were in urgent need of dental care. After returning to Canada, she put her mind to formulating a plan to help the children by providing them with primary dental education.

Elina spent much time fundraising and lobbying to obtain the education materials, toothbrushes and dental floss she needed for her project. After a lot of hard work, several dentists and dental supply companies had come to share her eagerness to help.

By 1989, her project was up and running and many Dominican children were receiving their first lessons in oral hygiene. The project was such a success that Elina decided to expand her work beyond dental health education. By 1991, she had raised enough funds to open her first non-profit dental treatment clinic in Santo Domingo, the capital of the Dominican Republic. Here, children of underprivileged families received services for free, and adults paid rates lower than other private clinics. The clinic was named Sonrisas, which means "smiles" in Spanish.

In 1996, the impetus behind Sonrisas slowed as dental supplies ran low, equipment aged and the dentists supporting the project found it harder to handle the ever-increasing demands for affordable dental treatment in the Dominican Republic. In response to their needs, Elina established a small office in Toronto, Ontario and worked non-stop to find help. In just two years, she raised enough support to supply the existing five clinics, and even opened a new clinic.

National expansion of Elina's Sonrisas clinics has helped the development of the Dominican Republic. Almost 500,000 children and their parents have received dental treatment that otherwise they could not have afforded. Today, six dental clinics operate in five cities of the Dominican Republic. Also new, if children cannot afford to travel to the clinics, the clinics will travel to them. Sonrisas now has four mobile dental treatment units that visit schools, community centres, isolated communities and rural areas. Dentists working in the mobile units provide dental hygiene education, fluoride applications, cleaning, restorative dentistry, and extractions. Two of the mobile units operate with a generator powering dental instruments.

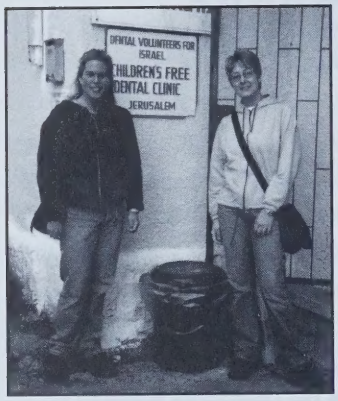
Building on their long-time base, and with the help of Canadian Feed the Children, Sonrisas now plans to establish a health education project in the Dominican Republic to cover reproductive health and family planning, women and children's rights, nutrition and disease/HIV prevention. To reach those most in need, five mobile health units will visit rural areas. Each unit will have a health educator to create networks of women's groups in towns and villages, as well as a doctor/dentist. This grassroots umbrella strategy will enable continued national support for health education and services through a network of community-based women's groups. Sonrisas believes this project will also help empower local women and, consequently, support women in particular in their roles as economic contributors and decision-makers within their communities.

Elina Katsman has dedicated her life to the people of the Dominican Republic. The employees and volunteers who contribute their time to Sonrisas share her energy. Together, they make healthcare available to those who need it most. Their efforts help children and adults in the Dominican Republic develop into healthy, confident people who can contribute to the development of their country.

For more information on the Sonrisas project, please contact Elina Katsman in Toronto at **(416) 661-8520**, by mail at **2727 Steeles Avenue West, Suite 301, North York ON, M3J 3G9**, or by e-mail at **Sonrisas@CIMtegration.com**

Dental Volunteers for Israel (DVI)

By Sandra Jennings, RDH



Sandra Jennings, RDH and Pamela Giese, RDH — Canadian volunteers for DVI

Dear Members,

A few months ago, as I was surfing the Internet, I came across a web site called Dental Volunteers for Israel (DVI). Located at **www.interdent.co.il/clinics/dvi/dvi.html** It seemed quite interesting to me, so I looked into it a little further, and eventually volunteered in the program itself. I would like to share this great experience with you!

DVI is a non-profit, apolitical organization, founded in 1980 by Trudi Birger, who remains President of the organization.

DVI provides free dental and preventive care to Jerusalem's underprivileged Jewish, Palestinian and Christian children including many new immigrants from Russia and Ethiopia.

Because dental care is only available privately in Israel, it is limited to those who can pay fees — which can sometimes be hefty. In addition, preventive care education is almost nonexistent, being given little attention in the schools or media. Lacking the alternatives that we have in Canada, for example, these disadvantaged youngsters have been subject to serious and painful oral problems, that is, of course, before DVI opened its doors twenty years ago.

Patients are referred to the clinic by the city's Social Welfare Department. The clinic is staffed throughout the year primarily by volunteer dentists and dental hygienists from twelve countries, who come at their own expense for a two to four week "working holiday". The clinic operates six modern dental surgery units daily and one preventive care clinic treating up to 150 children between the ages of five to eighteen daily.

Unfortunately for us, dental hygienists are mainly limited to doing fissure sealants. Dentists are given priority for acceptance as volunteers because of the wider range of their training and accreditation.

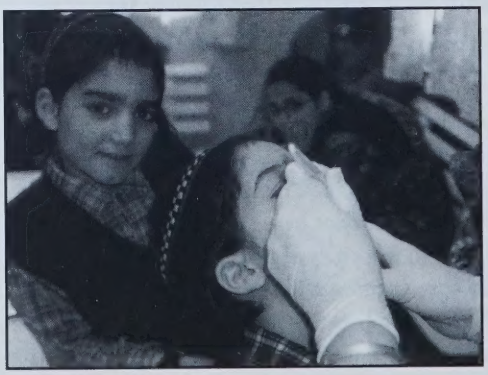
The program is extremely well organized and once children become DVI patients, the primary focus is on prevention. The program is organized to ensure that children do not just come in whenever a tooth hurts to get it treated. They come in regularly, every six months for a routine check-up. If the dentist notices problems with oral hygiene, the child is reassessed in the prevention clinic for education and support in areas such as home care, nutritional habits and dental knowledge.

Whenever I had a few minutes in between patients, I would head out to the prevention clinic to see how they went about educating the children and their parents. I must admit to being really impressed! It was an example of "textbook perfection". Approximately twelve people (children and their parents) at a time were taught all they needed to know about good oral health, from the role of bacteria or the consequences of eating sugar to the importance of proper oral health practices. For me, observing this was the highlight of my trip!

The educator handed out Oral B and G.U.M. toothbrushes to the kids and got them to brush their own teeth, as they would do in their own home. Afterwards the educator investigated how well they had brushed their teeth. She then showed them particularly how to brush the plaque areas.

What impressed me the most was how the educator had the whole room practically "in a trance" and completely focused on what she had to teach them.

Canadian RDH, Sandra Jennings treating an Israeli patient



The teacher, going over plaque-covered areas herself with a toothbrush. (Surrounded by a full and interested audience!)

My volunteer holiday was a great opportunity for me for professional review, while, at the same time, getting me thinking about possible strategies I could use in order to offer optimum quality treatment to my own patients. There's always something to learn. As long as we can keep an open mind and a desire to assimilate new information, we can only become better professionals.

I would definitely recommend this experience to anyone interested in volunteering their time and making a difference. During my stay in Jerusalem, my working schedule was four days a week for six hours each day, which allowed me lots of time outside work to see both the city and Israel itself too.

While you pay your own fare to Israel, DVI will provide an apartment during your stay. While I was there, for example, I had a nice apartment practically around the corner from the President, Ehud Barak!

If you have any questions about my experience, feel free to e-mail me at **sandrajennings@hotmail.com**, or call me at **076 332 4976** or **032 322 5476.**

If you wish to contact DVI, contact Trudi Birger in person. You can e-mail her at **dvi@internet-zahav.net**, or write to her at **DVI, 29 Mekor Chaim Street, Jerusalem 93465, Israel**, or phone her at **(02) 678 3101** or **(02) 678 3144**. DVI can also be faxed at **(02) 678 8173**.

Guatemala: Blood, Sweat, and Tears

By Donna Kittle, B.Sc., RDH

"I felt sorry for the little kids, some of their mouths stank and their teeth were black and rotten right down to the gum line", exclaimed John Wittnebel, go-for volunteer with Kindness In Action Service Society of Alberta, Group II Guatemala.

Kindness In Action is a Canadian registered not-for-profit charity, consisting mostly of Canadian and American dental professionals and other volunteers. From its inception as an idea over a cup of tea in 1993, Kindness In Action has grown to include about 100 volunteers this year. Four dental mission teams experienced the annual trek to Central America during January 2000. The four working locations this year included: the Danli-El Pariaso area of Honduras; Roata, Bay Islands-Honduras; Chajul, Guatemala; and villages between Antigua to Panajachel, Guatemala.

Through random acts of kindness, we eliminate pain.

The motivation uniting all those who volunteer with Kindness In Action is the desire to help those with less in the developing world and the belief in the dignity of all people including their right to basic human needs. The volunteers work without compensation and many of them work in conditions that require them to put aside their own rights to basic human needs. The volunteers work without compensation and are responsible for their own expenses including airfare and accommodation.

This year, over 2,037 dental patients were treated. We provided free basic bare-bones dental services including: 2,795 extractions, 501 restorations, 374 cleanings, 73 sets of dentures, and many oral hygiene instruction demonstrations. Other professionals also provided 205 eye examinations and distributed eyeglasses.

Proactive treatment in third world countries is of utmost importance. This includes the provision of toothbrushes and instruction of basic oral hygiene. A child in Guatemala does not receive a toothbrush until Grade One. Most of the children would laugh and giggle as we placed toothbrushes in their tiny hands. After we showed them how to brush using our toothbrushes in our mouths, they would finally catch on. With basic toothbrush instructions, we are helping prevent the consequences of rampant dental decay.

"Amazingly, within 20 minutes of arriving, we can turn a bare room into a dental clinic", said Dr. Loreen Distifano, Group II Guatemala. Without expectations, volunteers roll up their sleeves and tackle the job at hand, delivering basic dental care as a unified team. With respect, tolerance, flexibility, commitment, and patience, each team gels together. It is not an easy task working in a, sometimes literally, grass-roots environment with strangers you have just met. Often resembling a M.A.S.H. unit, our dental teams use whatever supplies and resources are available to deal with new challenges. Over the years, our creative dental groups have dealt with lost luggage, missed connections for equipment transfers, broken-down buses, challenging accommodations, cold showers, stolen supplies and equipment, and the destruction of hurricane Mitch, which resulted in some areas of Honduras having to set up dental missions from scratch again.

Patients sit in a wooden chair or lay on a table or bench with a green garbage bag duck-taped to the side. This is the spit bag! One member of the Escoupa Groupo, (the Spit Group) as we are affectionately known by our Spanish amigos, determines the problem and delivers relief while the other holds a flashlight, runs for instruments, beckons the translator to come quickly, or holds a trembling hand. "It is amazing how

GUATEMALA...*continued on page 176*

INTRODUCING
ORAL CARE SYST
CREATED B
A PERIODONT
NOT
MARKETING DEPARTME

Knoll
BASF Pharma

AN
EM
Y
IST,
A
NT.

INTRODUCING ORAL PLAN™, a new, complete approach to oral care that was developed by someone whose expertise lies in teeth and gums, not market share. Oral Plan consists of a revolutionary, new dental floss, a patented antibacterial mouth rinse and a low abrasion whitening toothpaste[1]. When used daily, they remove plaque and deliver antimicrobial medication directly to the site where the most damage is done - between teeth and under the gum line.

Before After
Example of Streptococcal Kill Rate*

A FLOSS THAT ALSO ACTS AS A DRUG DELIVERY SYSTEM

Oral Plan Antibacterial Floss is the first dental floss that is specially treated to contain fluoride, cetyl pyridinium chloride (CPC) and triclosan, so it delivers medication directly to the tooth surface at the base of the pocket, where cavities and gum disease start. CPC and triclosan are antibacterial agents that have been shown to inhibit the growth of plaque- and gingivitis-causing bacteria. Flossing with Oral Plan not only removes debris from between teeth, it also removes bacterial plaque that causes gingival disease.

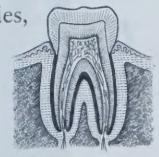
RINSE AWAY BAD BREATH AND HARMFUL BACTERIA

Oral Plan Antibacterial Mouth Rinse also contains a unique combination of CPC, triclosan and fluoride. Its minty fresh formula strengthens tooth enamel and prevents bacterial plaque from forming between brushings. And it doesn't contain ingredients that could stain your patients' teeth.

WHITEN TEETH WITHOUT BLEACH OR PEROXIDE

Your patients may be eager to try some of the new whitening toothpastes. Oral Plan Special Whitening Toothpaste removes plaque and cleans and whitens teeth with very low abrasivity. And it's safe to use on all dental work including porcelain and other restorative materials. So they can clean and whiten their teeth without worrying about damaging the enamel coating.

Oral Plan is a complete oral care program for your patients. With both fluoride and proven antibacterial ingredients, it inhibits growth of bacterial plaque and delivers medication to all sites of the tooth surface - labial, lingual and interproximal - providing exceptional protection against cavities, gingivitis and gum disease. And it was developed by a periodontist, someone who knows what it takes to keep teeth and gums perfectly healthy.



A COMPLETE ORAL CARE SYSTEM DEVELOPED BY A PERIODONTIST.

1. Hefferren John A. A Laboratory Method for Assessment of Dentrifrice Abrasivity. *J Dent Res*, July-August 1976 Vol. 55, No. 4.
Abrasivity data on file and available by calling toll-free 1-877-229-PLAN (7526).
*Graphic representation of before and after example of streptococcal kill rate.

GUATEMALA...*continued from page 173*

well you can communicate with a smile and some charades," said Leslie Comis, 20-year veteran in dental hygiene, Group II Guatemala.

"The Guatemalan people were quick to smile and absolutely wonderful patients," said Comis... "at home, it is easy to lose your enthusiasm for dental hygiene... but because these people are so appreciative, you know you are making a difference. This is a great place to boost your enthusiasm for your career as well as improve your Spanish skills and confidence in giving local anesthetic."

In the Mayan language, Guatemala means "land of many trees". Group II Guatemala arrived on January 29th, 2000 in Guatemala City at approximately 10:00 pm. After a one-hour bus ride to Antigua, the old colonial city of cobblestone streets and tile roofs, our team of 26 Escoupa Groupos unloaded the bus (which would become a four times daily ritual) and settled into our first base camp in the land of eternal spring.

We took day trips by bus to the small lush mountain villages of San Lorenzo El Tejar (Ladino population); San Antonio Aguas Calientes (100% indigenous where the language spoken is Kaqchikel); Tecpan, Chimaltenango (90% indigenous, again Kaqchikel speakers); Sam Andres Semetabj, Solola (an indigenous boarding school). Awed by the beauty of its tropical jungles, volcanoes, mountains and lakes, we had our cameras constantly poised. In our clinics, singing and laughter was heard on a daily basis throughout the makeshift clinics as the patiently-waiting crowds were treated as quickly and efficiently as possible. We quickly found that the population is brave, often putting up with many months of pain. A dental mission of this type is not for the faint of heart, but rather for the adventurous with a sense of humour and a desire to help humanity.

Day 4 started with a three-hour bus ride, increasing in elevation through the mountains to 2110 metres at Solola, our last day of clinic or work. After the last patient had been treated, clean-up completed, and each and every one of us was hugged and blessed by Mother Superior who ran the school, we continued on our bus ride to the second base camp at Panajachel. This town, filled with laid-back travellers, has a great view of the beautiful volcanic crater-lake Lago De Atitlan. During our rest day in Pana, most of us chose to spend it together checking out the small villages across the lake.

The success of Kindness in Action has brought added responsibilities and expenses. Our budget this year was $140,000. But, together, as a community, we do make a difference. Through random acts of kindness, we eliminate pain by providing dental care, touch lives, and leave hope. Kindness In Action strives to plant the seeds of self-sufficiency in third world countries of Central America. We invite you to join Kindness In Action and help make small changes. Our small changes are giant steps for Honduras and Guatemala.

For more information, please contact:

Dr. Amil Shapka
Kindness In Action Service Society of Alberta
Box 1334
St. Paul AB T0A 3A0

An Update From Hungary

By Margit Juhasz, RDH

This past spring, I returned again to the little village of Jaszjakohalma, Hungary, to visit with my family. I brought with me for the second time my dental hygiene awareness program called ***BRUSH*FLOSS*SMILE*IN*HUNGARY***.

Instead of bicycling around the village as I did in 1998, I decided to take my volunteer project into the elementary classrooms of the same school where I had begun, at age six, to learn my ABCs. The building remained unchanged. Inside, the hallway, the classrooms, the blackboards and the desks were still as they were back then. Only the faces of students and teachers were different now. As I entered each classroom, even the smell of the air had not changed.

The principal, teachers and, most of all, the children were very excited and happy to see me coming, armed as before with toothbrushes and floss for 300, photographs and the always popular plastic model of teeth and oversized toothbrush.

From grades 1 to 8, I went from class to class to show the children the correct way of brushing and flossing. The presentation went further, also addressing the importance of good diet, the relationship between sugar and tooth decay, soft drinks, chewing gum, smoking and its hazardous effects, tongue brushing, and fresh breath control.

I spent hours in classrooms and in the gym (which turned out to be the largest classroom), educating children about good oral hygiene. When I attended elementary school here, nobody ever mentioned the importance of tooth brushing and flossing did not even exist. Many children, even today, did not own floss. Every child received a toothbrush and floss set, products that I had received from generous donors in Canada.

I plan to enjoy returning to my village annually to bring my ***BRUSH*FLOSS*SMILE*IN*HUNGARY*** program to teach the children about good oral care. This was the second time I had brought my dental hygiene expertise back to the children of my birthplace. It was a fulfilling experience for me both personally and professionally, and the children clearly both liked and benefited from it too.

I want very much to thank those listed below who donated the toothbrushes and floss that made ***BRUSH*FLOSS*SMILE*IN*HUNGARY*** another successful year.

Halton Peel Dental Hygienists' Society,
Dr. John F. Kalbflwisch,
Dr. Arthur Majchrowicz,
John O. Butler Company,
Dr. John Naccarato,
Oral-B

Together, we put smiles on the faces of children in Jaszjakohalma, Hungary.

Margit Juhaz provides handouts for the school children

Say cheese!

Demonstration in the school gymnasium

Margit with classmates

Reaching Out... Dental Hygiene Efforts in Bolivia

by Heather Pernisie, RDH and Tara Pshebnicki, RDH

Deep in the heart of the Bolivian jungle lies a tiny community known to its native inhabitants as the Communidad Tres de Mayo. The several small thatched huts perched on the brink of the flood-swollen cappuccino-coloured waters of the Rio Secure, serve as the homes of nearly eighty indigenous people. Pigs and chickens meander about while women crush corn with giant wooden pestles and men weave banana leaves together for the roof of a new dwelling. The children occupy themselves with their own version of soccer, an unripe melon they've picked from a nearby tree doubling for a ball. This peaceful community rests in quiet isolation from the bustle of the nearest town, Trinidad, a two-day canoe trip down-river. This day, however, a thread of excitement weaves through the town as word is passed along that special visitors are soon to arrive...

Such was the scene that greeted us as we arrived on the bank of the tiny village of Tres de Mayo. It was hard to believe that we were actually there! The adventure had begun six days earlier when we met up with the other members of our dental team in the town of Trinidad.

A Bit About Trinidad

The city of Trinidad boasts a population of about 60,000 and is nestled in the Amazon basin of the northeastern region of Bolivia, South America's second-poorest country. The Bolivian population is predominately indigenous with a smaller group of European descent. The indigenous population consists of the Yurocare and Trinitariao, whose languages are similarly named. However, the official language in Bolivia is Spanish. The climate of Trinidad follows a typical sub-tropical trend with a rainy season from October to April and a dry season from May to September. During the time of our visit, the average temperature in Trinidad hovered around 35° C with daily rainfalls in the afternoons. This hot and humid environment resulted in a great deal of sweating and several painful sunburns which were quite an adjustment from the hearty Manitoba winter we had left behind!

Teaming Up

The voyage from Manitoba to Bolivia was not without its adventures. We traveled in two separate groups, leaving a day apart and both facing different challenges along the way. Our group of three dental hygiene students had the added bonus of a missed connection between Miami and La Paz (Bolivia's capital), which led to a forced lay-over in Miami, many more flight complications and a grand finale of arriving in Trinidad minus our carefully-packed luggage! We were grateful to the other members of the dental team, who had arrived before us, for lending us a few articles of clothing. Our luggage finally found its way to our hotel in Trinidad three days later after a great many phone calls and much worry about the accessories we might have had to go without.

Once assembled, our group comprised a total of ten dental personnel: three dental hygiene students, two dental students, two dental residents, two dentists and a dental hygienist, all hailing from the University of Manitoba's Faculty of Dentistry and School of Dental Hygiene. After a myriad of traveling fiascoes, we successfully found each other in the city of Trinidad and set about preparing for the jungle adventure we had all been anticipating for so many months.

How It All Began

Travel plans had originally begun to unfold in November 1999, when we first explored the idea of accompanying Dr. Ron Boyar and Dr. Gerry Uswak on one of their bi-annual expeditions to Bolivia. As the trip would involve missing a significant amount of academic course work, we had to obtain the approval of our professors for our "practicum" in the initial stages of planning. We were thrilled to discover that our proposition had been received with great enthusiasm by all instructors, and we were even able to incorporate projects from two separate courses into the objectives of our mission. Preparations for the trip included immunization for Hepatitis A, Yellow Fever and Typhoid Fever, purchasing backpacking essentials such as rain gear, water purifying systems, insect repellent, etc., travel

planning and meetings with the rest of the group. The cost of the trip varied between travelers as each one of us made a variety of different excursions en route home from Bolivia. On average, the total cost of the trip was nearly $3,000 (Cdn) for each individual which included various recreational activities and tourist excursions along the way.

Upon our team's "rendez-vous" in Trinidad, preparations for the jungle excursion began at EPARU, a boarding school run by Catholic nuns on the outskirts of the city. Dental supplies had been safely stored here between the bi-annual visits made by Dr. Boyar and Dr. Uswak, supplies that consisted of not only gloves, masks, dental materials and local anesthetic, but generators, portable dental units, dental chairs and instruments, acquired mostly through generous donations in previous years. The dental team was split into two separate groups that would depart for two distinct regions, so it was imperative that all the supplies were organized and divided up evenly. Weight was crucial for one team as they were required to travel by small plane to reach their destination of San Lorenzo. Careful estimations had to be made of weight of supplies being sent with them to ensure that the plane would be able to take off safely. Despite all the meticulous organization, the San Lorenzo team would later discover that they had received the lesser half of the anesthetic and would have to request more supplies to be flown in. It was all part of, what was, for most of us, a first-time experience with the challenges of international humanitarian dentistry.

Another obstacle we encountered was of a more political nature. In past trips, Dr. Boyar and Dr. Uswak had established an agreement with the Governor of Beni (the territory around the city of Trinidad) regarding the provision of fuel for both the plane and boat transportation by the Bolivian government in exchange for free dental services for the citizens. Complications arose, however, when the Governor was out of town during the time when the fuel was needed to be acquired and his second in command was reluctant to sign for the dispersment. After a couple of days' negotiations, the Governor finally returned and the fuel was obtained. Our departure had been postponed by a day, but we soon discovered that flexibility is imperative in these adventures as plans tend to change by the hour!

Our Sight-Seeing Expeditions

Having some extra time in Trinidad before heading up-river, we set out to see as much of the area as possible. We quickly discovered that renting scooters was an exciting and economical way of doing so. We zoomed up and down the cobblestone streets, often narrowly avoiding mishaps with the semi-comatose cows that seemed to rule the roads. These rather scrawny beasts chose to wander aimlessly along the shoulder of the streets without a hint of concern about the motorcycles and trucks whizzing past. At random intervals, they would decide to cross to the opposite side, leaving vehicular havoc in their wake. At one point in our touring, we were all drawn to the sidewalk, where a three-toed sloth was making its way out of the sewage-filled gutter toward nearby buildings. A heroic effort was made by one of the dental students lifting the sloth off the sidewalk and into the safety of a nearby tree. During our city tours, we came upon the Beni Fish Museum, the local university and a busy market place, all of which we eagerly captured on many rolls of film!

Destination: Jungle

Final preparations purchasing bottled water, food and miscellaneous travel items complete, the five of us set out in the back of a pickup truck to make the trek to the awaiting riverboat. The other team of five had left earlier that day by plane and were well involved in their work in San Lorenzo by the time we started out. The voyage to the boat took several hours and led us over many types of terrain — from rutted jungle roads to a ferry ride across a lagoon aboard a wooden raft. When we finally arrived at the river's edge, we had thought the adventure was over, we were greatly mistaken! It had only just begun…

In the first few minutes aboard the hewn-out canoe which would take us up-river to where the houseboat was waiting, we survived a near-sinking. There was an audible sigh of relief as we boarded a vessel of more significant size and security! We would spend the next two days traveling up three rivers, the Rio Mamore, the Rio Isiboro and the Rio Secure before we would reach our destination of the Communidad Tres de Mayo. The houseboat, which would be our residence for the duration of our time on the river and while providing dental care, was constructed mainly of wood, and bore a strong resemblance to an old steamboat. Five small rooms, each with a narrow bunk bed and small dresser, provided our sleeping accommodation while the infirmary doubled as an additional room. There was a tiny kitchen, where our meals were prepared by the cook, and a large eating area adjoining it. Washroom facilities consisted of an empty room at the stern of the boat, which housed a showerhead and two clothes hooks. The water for the shower was pumped directly from the (rather murky) river directly into the showerhead. We often had to rid the shower room of a few large arachnids (yes, spiders) before occupying it ourselves! The toilet had its own little room and was kept quite busy, being shared among the thirteen of us.

During our stay on the boat, we were well cared for by the friendly crew that included four pilots, a nurse, a cook and two nuns, Geralda and Maritzia. Our meals consisted of a light breakfast, most often buns, coffee, fish soup and deep-fried pastry, a hearty lunch of soup, a meat dish, salad, fried yucca, rice and lukewarm punch (refrigeration was very difficult). Usually, we had a light dinner of buns, cheese and farmer's sausage. The cheese and sausage were both special varieties, which did not require refrigeration, so were easy to store for the time of our journey, and the fish, known as Paku, was caught fresh from the river.

During the two-day voyage, we spent hours enjoying the comfort of the two hammocks suspended on the back deck of the boat. Freshwater dolphins accompanied our boat on the river, and there was an array of wildlife along the shore: the occasional crocodile, parrots, herons, monkeys and a great variety of insects (the latter kept at a relative distance with the use of 95% DEET repellent.) A great amount of energy was spent avoiding insects, which plagued us morning and night. The most common were mosquitoes; joined by small "no-see-um" flies, which left a tiny blood scab bite. There was also some concern about a local sand fly, which carries a parasite responsible for causing a disease known as Leishmaniasis (white leprosy). Should the parasite be contracted, the infection would spread through the lymph system causing severe systemic implications and leaving a looney-sized hole where you had been bitten. Great efforts were made to remain indoors around the hours of 6am and 6pm when the bugs were said to be the most active. Despite the ongoing battle with insects, the journey up-river proved to be relaxing and enjoyable.

The greeting we received as we pulled up to the bank of the village of Tres de Mayo made us feel like royalty. The people had been warned of our arrival via a primitive radio network, which serves as a communication link between the many tiny communities in the indigenous territory. They were very excited to be receiving dental attention for the first time ever in that area. After a great deal of anticipation, we too were eager to begin setting up our portable dental clinic.

Assembling the Clinic

Thanks to the strong backs and keen help from the boat pilots and villagers, the supply boxes were lugged ashore and we were able to begin unpacking. We set up our clinic on the front porch of a building that the nuns had previously helped build for the people. It housed a small general store and a couple of empty meeting rooms. Three dental chairs were erected: one for restorative work and two for extractions. A small waiting room was also established at one end of the porch. While in this reception area, patients were given numbers by the nuns to establish their order in the examination schedule. In order to maintain statistical records of the dentistry provided and the general dental condition of the population, a basic chart was established for each patient treated. The charts consisted of the patient's name, home community, estimated age, missing teeth, planned treatment and completed treatment. As the patients had no record of their date of birth, approximate dates were calculated by asking patients about when they were married, or how old they were when their first child was born, for example. No medical histories were available, though the population seemed in good health given their living conditions. Although 162 dental charts were created, only 154 patients reported for examination, 139 of whom required treatment. DMFT (decayed, missing and filled teeth) statistics were recorded for 58 of these patients, who on average had 4.28 missing teeth and 248 missing teeth in total. No previously filled teeth were recorded, as the community had not received any dental attention prior to this visit.

Prior to commencing our treatment, we agreed that it would be most effective to work in two teams — each including a dentist and a dental hygienist — the dental hygienist's job was to provide both the local anesthetic and assistance with the extractions. The third dentist, who was not paired up, was responsible for the operative treatment chair. This proved to be a successful arrangement, with the two dental students taking turns providing operative and extraction treatments.

The Dental Experience

We had anticipated that the bulk of our work would involve performing extractions, but we were not prepared for the magnitude of the task. A total of 413 extractions were performed over a span of four days. As well, 70 restorations including amalgam fillings, composite resin fillings and the occasional preventive resin sealant were completed. The majority of the fillings were limited to only one or two surfaces as larger restorations were not expected to be successful over the long-term because the high environmental humidity and poor moisture control in the oral cavity would affect the successful application of the filling material over multiple surfaces. A generator was used to power the high and low-speed hand pieces, however, suction and an air/water syringe were not available. This caused some challenges in maintaining a dry field while placing the fillings. Lighting also proved to be a problem during treatment as the portable lights had limited intensity and were difficult to focus. A hand-held flashlight, and in one case a head-lamp worn by one of the dental hygiene students, proved to be more effective.

Infection control was maintained to the best of our ability given the working environment. Instruments were sterilized using a sodium hypochlorite solution followed by rinsing and manual drying with towels. Although these standards may not meet the expectations of dental practices in the developed world, they were best possible techniques that could be employed with the materials we had at hand.

Another formidable challenge, for those of us who were not fluent in Spanish, was overcoming the communication barrier that existed between ourselves and our patients. We had only learned a few basic Spanish terms prior to departing on our trip and so we found ourselves relying heavily on the help of Dr. Uswak, one of our fellow dental hygiene students and Sister Geralda, all of whom were bilingual. By the end of our time in Tres de Mayo, we had picked up a few common dental phrases which proved very helpful during our treatments: "abre mas grande, por favor" ("open wider, please"), "muerde mas fuerte" ("bite down hard"), and "donde duele?" ("where does it hurt?") for example. If we were to make this trip again, many of us agreed that we would make a greater effort to familiarize ourselves with the language prior to departure in order to facilitate communication and interaction with our Bolivian patients.

Join the Humanitarian Effort!

The administration of local anesthetic was a welcomed procedure among the patients. It was reported that when suffering from dental pain, people would often extract their own teeth without the use of analgesics or anesthetics. The patients were very brave about receiving multiple injections in order to complete all of the necessary treatments. Topical anesthetics were not used as we already knew that topical gels created highly viscous saliva in these group of people which would have complicated dental procedures. The majority of the injections given were inferior alveolar nerve blocks, infiltrations and palatal blocks. Mental blocks proved to be difficult to "landmark" because so many patients had missing mandibular teeth as well as secondary to advanced caries, therefore, these injections were rarely used. Time constraints required that patients were generally seen only once for extractions and, therefore, all necessary treatment had to be completed in one session. To facilitate this single treatment, the entire mouth was often frozen. Initially, the children were slightly upset by the feeling of their tongues due to the freezing, as this was something they had never experienced before. With gentle reassurance though, they were usually calmed and became much more compliant with treatment. If the patients required further restorative work, because restorative procedures were much more time-consuming and had to be completed in the designated operative chair, they were instructed to return the following day. Over the course of four days, patients traveled for several days from as many as seven different villages to obtain treatment, and we continued to provide treatment until everyone was seen.

Join the Humanitarian Effort!

The clinical experience at Tres de Mayo was highly rewarding from many aspects, however, there was a distinct feeling among us that no amount of help would ever be enough considering the enormous need that would continue to persist long after our departure. Recognizing this, we to become more actively involved in humanitarian efforts in the future. Whether in the under-served areas of our own country or abroad, there will continue to be an enormous demand for dental hygienists to reach out in every capacity. We would encourage everyone to embark on humanitarian endeavour, be it for the first time or the fifteenth time. We can assure you that the ensuing feeling of accomplishment is a worthwhile reward!

A Word of Thanks

We would like to extend our appreciation to both Dr. Ron Boyar and Dr. Gerry Uswak for sharing this Bolivian experience with us, and for their patience as we learned by trial and error about the joys and tribulations of undertaking such an excursion. We would do it again in a moment!

We would also like to recognize the incredible team of volunteers with whom we had the pleasure of sharing this trip: fellow dental hygiene students, Emma Martinez, Trish Warden (RDH), Chris Clarke (DMD), Jay Biber (DMD), Noriko Boorberg (dental student) and Shamick Kotecha (dental student). Everyone contributed their own invaluable element to our dental team and to the success of the trip. Thank you to all!

Heather Pernisie is a graduating student at the University of Manitoba's School of Dental Hygiene. She hails from British Columbia where she began her science degree. She plans to complete her B.Sc. in Dental Hygiene following graduation in June 2000. She has been actively involved in promotional events and student council affairs throughout her academic career and hopes to pursue academic or administrative aspects of the dental hygiene profession. Recently, Ms. Pernisie received the 2000 CDHA/Oral-B Dental Hygiene Student Scholarship. *(See page 195).*

Dental Health Project in South Lebanon

By Beverley Timgren, RDH

Upon graduation from University of Toronto's school of dental hygiene in 1977, I worked for the City of Toronto's Department of Public Health. I loved my job, but in 1983, a new challenge changed my life. Granted a leave of absence, I left Toronto to join a British dentist in a humanitarian aid project in war-torn south Lebanon. I expected to return to my job the following year, but more than sixteen years later, I am still working in south Lebanon.

Nothing happened according to plan. Soon after my arrival, the dentist I was to work with had to return to England. He had received a donation of dental equipment, but it was not installed when I arrived. After it was, the equipment was confiscated. But even without the dentist and the clinic, I decided I could accomplish something as a dental hygienist. The region was devastated and poor after years of civil war that continued to rage. Since most of the professionals had fled, there was a lack of medical and dental care. As a public health dental hygienist, I came equipped to teach and, with a translator, I taught in many local schools. I kept records and did a study to assess the dental health status of children, but it was frustrating to see the urgent need for dental treatment that I could not give by myself. Eventually, I received another donation of dental equipment. My leave had been extended, but at this time, I gave up my job in Toronto and took the responsibility to develop and direct the Marjayoun Dental Clinic. I renovated the old dental clinic in the abandoned government hospital, replaced the broken-down equipment, purchased instruments and materials, hired Lebanese dentists, trained assistants, and in 1986, with funding from the Canadian International Development Agency and other donations, opened the new dental clinic.

Besides preventive clinical services, I continued a preventive program in some local schools. The region was fluoride deficient, oral hygiene was poor, the caries rate of the children I had examined was high and there was no dental public health awareness. I trained assistants to teach dental health lessons in the schools, but I knew that a fluoride program was essential to really making a difference. Researching the literature, I decided that fluoride rinsing in the schools would be the most feasible and cost-effective method. I purchased the materials needed and initiated my project in several schools. The dental clinic took most of my time and resources, and without more help and support, I could not sustain the fluoride program. There was no official government agency involved in the region, but we did have a United Nations peacekeeping force. I kept in contact with the dental officers of the Norwegian United Nations Interim Force in Lebanon (UNIFIL) battalion and gave them reports of my work for their files. During his 1991 tour of duty, the Norbatt dentist examined the school children of the village where he was based and found a significant reduction in caries in the students of one particular grade. He attributed it to the fluoride rinsing I had done in that school. We discussed the possibility of doing a preventive program together with Dr. Antoine Choufani, one of my former staff dentists who had continued his studies in dental public health and subsequently joined the teaching staff at the Lebanese University. We submitted a proposal and the humanitarian officer agreed to fund a fluoride rinse program in the schools of the Norbatt region. Our study evaluating the project proves the effectiveness of a school-based fluoride rinse program. A summary of that study follows. I hope that it will encourage the establishment of similar projects throughout the country.

There is a great need for preventive dentistry in Lebanon. Pioneering as a Canadian dental hygienist in south Lebanon in the midst of war, political complexities and cultural differences has been a challenging, but truly rewarding experience.

Benefits and Effect of a Six-Year School-Based Fluoride Mouth Rinse Program

Antoine Y. Choufani, DCD, DU; Bassel H. Doughan, DCD, MPH; Mounir A. Doumit, DCD, DSO; Department of Dental Public Health — Lebanese University, Beirut-Lebanon; Beverley Timgren, RDH

Author responsible for correspondence:
Dr. Antoine Choufani

Fax 00961-1-425035 ext. 5474 c/o Jihan Falah
E-mail: falah@un.org

Abstract

OBJECTIVES:
A supervised mouth-rinsing program was implemented in south Lebanon in order to determine the effect and the post-treatment benefits of fluoride after six years of administration.

METHODS:
300 school children aged between six and fourteen years received a weekly fluoride mouth rinse solution of 0.2% NaF (neutral). Norwegian UNIFIL dental officer offered logistics for the program.

RESULTS:
The evaluation element was the decayed, missing and filled teeth (DMFT) index. The post-program screening showed a decrease in the DMFT index of 43% and this decrease continued three years after the fluoride mouth rinse regimen was discontinued.

CONCLUSION:
Fluoride mouth rinsing is effective in high risk, non-fluoridated communities and is beneficial even after the regimen of regular rinsing is discontinued.

KEY WORDS:
fluoride mouth rinse, DMFT, school children.

Introduction

The United Nations Interim Force in Lebanon (UNIFIL) has been a peace-keeping force in south Lebanon since 1978. The Norwegian UNIFIL battalion worked in the eastern sector of the zone, a poor socio-economic rural area. Dental health studies indicated a high prevalence of dental caries. The decayed, missing, filled teeth index (DMFT) of a twelve-year-old children was 9.26, much higher than the objective set by the World Health Organization (WHO) by year 2000, a DMFT of less than three. The reason for such a high DMFT was attributed to: poor oral hygiene and the absence of any kind of preventive program[1]. Further, the water in the area is fluoride-deficient[2], and children did not receive any kind of systemic or topical fluoride therapy. The Norwegian UNIFIL dental officer, representatives of the department of dental public health of the Lebanese University, and Canadian dental hygienist, Beverley Timgren, initiated a school-based program of fluoride rinsing in order to decrease the prevalence of dental caries in school aged children. The objective of this study was to determine the efficacy of fluoride administered by regular mouth rinsing and to determine the relation between benefits and duration of fluoride rinsing. Studies show conflicting evidence concerning the benefits during and after stopping the regimen of fluoride rinsing.[3,4]

Materials and Methods

The weekly fluoride mouth rinsing program began in January 1992, supervised by trained staff. Three hundred children, aged between six and fourteen years, in grades G2, G3, G4, G5 and I1 (Intermediate 1) participated in the program. Graph 1 shows the implementation of the fluoride mouth rinse program according to grade. The children in grades G2 and I1 received the fluoride mouth rinse for the duration of the program, but the children who passed to grades I2, I3, I4 (Intermediate 2, 3, 4) did not receive the rinse for 1, 2 and 3 years respectively. The children rinsed in their classrooms with 10 ml of a solution of 0.2% neutral NaF for one minute. The Norwegian UNIFIL battalion supplied the materials and funding. The program continued for six years, from 1992 to 1998 during the school year, stopping each year during the three-month period of summer vacation. To evaluate the effectiveness of the program the children included were screened by Norwegian and Lebanese dentists and dental hygienist, Beverley Timgren at the beginning and end of the program according to World Health Organization (WHO) criteria.[5] To ensure consistency, a training session was held to standardize data collection procedures. Mirrors and explorers were used under natural light. The evaluation element was the DMFT (decayed, missing, filled teeth) index. Statistical analysis was done using the SPSS software package.

Results

The mean DMFT decreased from 6.6 in 1992 to 3.8 in 1998 (Table 1), a 42% reduction. This difference was statistically significant ($P<0.005$). The DT (decayed teeth) component was 50% less at the end of the program. The MT (missing teeth) component did not change and the FT (filled teeth) component increased at the end of the program, although the difference was not statistically significant.

Table 2 shows the DMFT by grades at baseline and at the end of the program. The mean DMFT decreased in grade G2

from 2.9 to 1.7, a 41% reduction after one year of fluoride rinsing. The mean DMFT in grade I1 was 50% less after 5 years of continuous fluoride rinsing. A DMFT decrement was also observed in grades where there was a discontinuation of the program. In grades I2, I3 and I4 where the program was discontinued for 1, 2 and 3 years respectively, the DMFT reduction was around 43%. Six children (2%) were found to be caries free at baseline. This number increased to 54 children at the end of the program (18%).

When comparing DMFT by gender, boys at baseline had a higher DMFT than girls ($p<0.05$). At the end of the program, the DMFT of boys and girls decreased, but the difference by gender was not significant (Table 3).

Discussion

Many authors have recommended fluoride mouth rinsing for high risk and non-fluoridated communities.[6,7,8] Fluoride rinsing is considered to be a simple, cost-effective dental public health measure to decrease the prevalence of dental caries.[9,10,11] In this study, the high reduction of the DMFT index after one year of fluoride rinsing could be attributed to the greater uptake of fluoride by enamel surfaces of erupting and newly erupted teeth at six years of age.[12,15] After two years of fluoride rinsing, the reduction in the DMFT was stable (40%). A similar trend in DMFT decrease was observed the following years (Table 2). These results showed a non-cumulative effect of fluoride, but stability in the results. In grades I2 and I4, the benefits continued at a similar rate even though the regimen was discontinued for one to three years respectively. Studies are contradictory concerning post-treatment effect. In some, the benefit of fluoride decreased after two years,[4] but in others, it continued for several years.[3,17] In this study, the benefit was sustained over three years in the children of classes I2, I3 and I4 who had rinsed regularly with fluoride in the primary grades for the past five, four and three years respectively. This confirms the theory that post-treatment benefit is relative to the duration and continuity of fluoride rinsing.[18,19] The greatest benefit was seen in the decrease of decayed teeth (DT) from 6.1 to 3.1, a 48% reduction in dental caries.

Table 1
DMFT and its Components by Year

Year	1992	1998	Difference
DT	6.1 ± 3.3	3.1 ± 2.9	-3.0 *
MT	0.2 ± 0.5	0.2 ± 0.5	0.0
FT	0.3 ± 0.9	0.5 ± 1.4	+0.2
DMFT	6.6 ± 3.6	3.8 ± 3.2	-2.8 *

$P<0.005$

Table 2
DMFT Differences by Grades and Years of Fluoride Rinsing

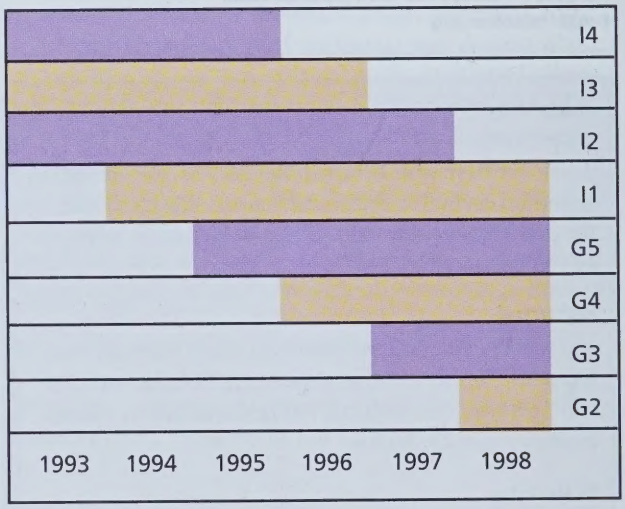
Grades	Fluoride rinsing (years)	DMFT 1992	DMFT 1998	Difference	% reduction
G2	1	2.9	1.7	1.2	41.4
G3	2	3.8	2.3	1.5	39.5
G4	3	4.8	3.0	1.8	37.5
G5	4	6.9	4.0	2.9	42.0
I1	5	8.0	4.0	4.0	50.0
I2	5	9.7	6.2	3.5	36.1
I3	4	10.4	5.6	4.8	46.1
I4	3	10.8	5.7	5.1	47.2

Table 3
DMFT by Gender and by Year

	Boys	Girls	Difference
1992	7.1 ± 3.6	6.2 ± 3.5	0.9 *
1998	3.7 ± 3.1	3.9 ± 3.3	0.2

$P<0.05$

Graph 1
Implementation and Completion of Fluoride Mouth Rinse Program by Grade



Conclusion

Fluoride mouth rinsing is a cost effective method to reduce the prevalence of dental caries in high risk and non-fluoridated communities and is recommended as a school-based public health program. A regimen of long duration and continuity is important to stabilize results. Benefits of fluoride rinsing continue for several years after the program is discontinued.

Acknowledgments:

Great appreciation and thanks to the Norwegian dentists: Per Ludeman, Per Arne Lunkan, Jon Edgar Stelheim, Tor Erikson, Ole Dahl, Bard Tanem, Jostein Eikeland, Erik Quillefelt, Kristi Marie Aasand.

References

1. Doughan B., Doumit M.: Oral health. In: *Beyrouth Lebanese University* — WHO, Leban: a situation analysis, 1995
2. Doumit M.: *Intérêt de la fluoruration des eaux au Liban*. Beyrouth Université libanaise, 1995
3. Haugejorden J., Lervik T., Riordan P.J.: Comparison of caries prevalence seven years after discontinuation of school-based fluoride rinsing or tooth brushing in Norway. *Community Dentistry and Oral Epidemiology*, 13: pp. 2–6, 1985
4. Widenheim J., Birkhed D., Hasc J.C, Olavi G.: Effect on approximal caries in teenagers of interrupting a school-based weekly NaF mouthrinse programme for three years. Community Dentistry and Oral Epidemiology, 17: pp. 83–86, 1989
5. World Health Organization: *Enquêtes sur la santé bucco-dentaire*. 3rd Edition. Genève: WHO, pp. 19–23, 1988
6. Burt B., Eklund S.: Community-based strategies for preventing dental caries. In: Pine C. *Community Oral Health*. Oxford: Wright, pp. 112–125, 1997
7. Adair S.M.: The role of fluoride mouth rinses in the control of dental caries: a brief review. *Pediatric dentistry*, 20: pp. 101–104, 1998
8. Wei S.H.Y, Yiu C.K.Y.: Mouth rinses: Recent clinical findings and implications for use. International Dental Journal, 43: pp. 541–547, 1993
9. Burt B., Eklund S.: *Dentistry, dental practice and the Community*. 4th Edition. Philadelphia: Saunders, pp. 175–191, 1992
10. Leske G.S., Ripa L.W., Callamen V.: Prevention of Dental Disease. In: Jong A. *Community Dental Health*, 3rd Edition. St.Louis: Mosby, pp. 156–193, 1993
11. Doughan B., Doumit M., Samneh C., Souhaid P., Nasseh I.: Fluorothérapie et thérapeutique préventive en médecine dentaire. Beyrouth: *Lebanese University — St. Joseph University*, pp. 16–28, 1991
12. Ripa L.W.: A critique of topical fluoride methods (dentifrices, mouth rinses, operator and self-applied gels) in an area of decreased caries and increased fluorosis prevalence. *J Public Health Dent*, 51: pp. 23–41, 1991
13. Blinkhorn A., Holloway P., Davies T.G.: Combined effects of a fluoride dentifrice mouthrinse on the incidence of dental caries. *Community Dentistry and Oral Epidemiology*, 11: pp. 7–11, 1983
14. Triller M., Sommermater J., Glergeau-Guerithault S.: Fluor et prévention de la carie dentaire. Paris: *Masson*, pp. 69–98, 1992
15. Chikte U., Lewis H., Rudolph MJ.: The effectiveness of a school-based fluoride mouthrinse programme. *Journal of the Dental Association of South Africa*, 51: pp. 697–700, 1976
16. Petersson L.: Fluoride mouthrinses and fluoride Varnishes. *Caries Research*, 27: pp. 35–42, 1993
17. Kobayashi S., Kishi H., Yoshihara A., Horu K., Tsutsui A., Himeno T., Horowitz A.: Treatment and post-treatment effects of fluoride mouthrinsing after seventeen years. *Journal of Public Health Dentistry*, 55: pp. 229–233, 1995
18. Mellberg J.R., Ripa L.W.: *Fluoride in preventive dentistry, theory and clinical applications*. Chicago: Quintessence, pp. 243–277, 1983
19. Yamaguchi N., Saito T., Oho T., Sumi Y., Yamashita Y., Koga T.: Influence of the discontinuation of a school-based, supervised fluoride mouthrinsing programme on the prevalence of dental caries. *Community Dental Health*, pp. 258–261, 1997

International Oral Health Promotion Day

October 11, 2000

An opportunity to raise awareness of oral health to everyone and promote dental hygiene worldwide.

CDHA participates and supports this mandate through our celebration of National Dental Hygiene Week™, **October 15–21, 2000.**

IFDH

D-Sharp DENTAL INSTRUMENTS

" Bringing your Dental Instruments Back to Life "

Well-maintained instruments increase practice productivity, offer better patient comfort and are essential for superior dental care. At D-Sharp, we offer a complete Dental Instrument re-sharpening, re-tipping and Handpiece Repair service.

Please call to arrange for a pick-up! Ask us about our new "State of the Art " sharpening stones and educational video!

Better Quality Care
Higher Productivity
Better Quality Service
Lower operating Costs

Please call our Toll Free Number:
1-887-8DSHARP (1-887-837-4277)
Fax: (905) 331-5593
email: inquiries@d-sharp.com
www.d-sharp.com

Toronto • Calgary • Vancouver

Dynamic Seminars

"Success Through Professional Development"

Jenny Finan R.D.H.

53 MacDougall Drive, Dundas, Ontario L9H 6X8 Canada
Fax: (905) 627-8569 Email: info@dynamicseminars.net

Fall 2000 Professional Development Series

The Dental Hygiene Process of Care, *Lisa Mapplebeck, R.D.H.*
Saturday, September 30, 2000 9am – 1pm, Mohawk College, Fennel Campus, Hamilton

"The Cutting Edge" Dental Products for Clinical Excellence, *Dr. Rella Christensen*
Saturday, October 28, 2000 9am to 3pm, Burlington Holiday Inn, Burlington

Communicate & Educate Effectively Using the Intra-Oral Camera
Nancy Majeski Davis, R.D.H. (Limited Attendance, Regisiter Early!)
Thursday, November 9, 2000 7pm to 10pm, Patterson Dental, Mississauga

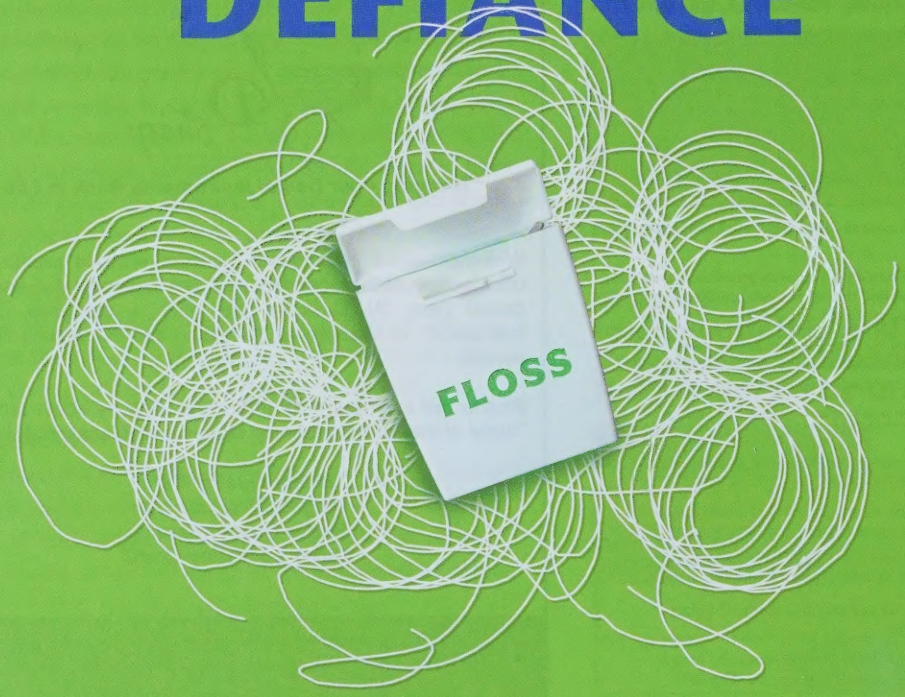
A Hartzell Scaler "Hands-On" Workshop for Dental Hygienists
Nancy Majeski Davis, R.D.H. (Limited Attendance, Regisiter Early!)
Friday November 10, 2000 9 am to 1 pm or 2pm to 6 pm, Mongomery's Inn, Etobiocoke
Friday, December 1, 2000 9 am to 1 pm or 2pm to 6pm, Mongomery's Inn, Etobiocoke

Dentin Sensitivity: Causes and Cures, *Dr. Hardy Limeback*
Saturday, November 25, 2000 9am to 1pm, Mohawk College, Fennel Campus, Hamilton

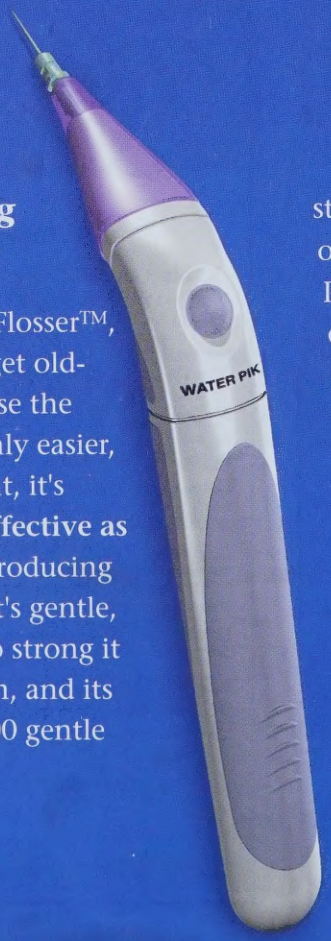
Audio Tapes Available:
"Fluoride: Oral & Systemic Effects", Dr. Hardy Limeback
"Effective Antimicrobial Agents for Periodontal Health", Dr. S. Andreana

To REGISTER or ORDER AUDIO TAPES:
Call (905) 627-7212
or visit our website at
www.dynamicseminars.net

DEFIANCE



COMPLIANCE



Having trouble getting your patients to floss?

With the the new Water Pik Flosser™, it's automatic. They can forget old-fashioned dental floss. Because the Water Pik Flosser ™ is not only easier, quicker, and more convenient, it's **clinically proven to be as effective as manual flossing** - without producing soft tissue damage. Though it's gentle, its single nylon filament is so strong it won't break off between teeth, and its up-and-down action at 10,000 gentle strokes a minute ensures thorough, one-handed cleaning. Plus, the Water Pik Flosser™ is portable, so patients can practice sound oral hygiene even on the road. Perhaps best of all, it's from Waterpik Technologies, the company you trust for the best in oral health innovation.

Water Pik Flosser™
FLOSSING WITHOUT FLOSS

www.waterpik.com

See us at ODA for a demonstration and an exciting introductory offer.

Upcoming Events

The Canadian Public Health Association

The Canadian Public Health Association (CPHA) 91st Annual Conference *Health for All in the Year 2000* will be held **October 22–25, 2000** in Ottawa, Ontario.

The CPHA Annual Conference in Ottawa will reflect on the progress that Canada and the world have made in achieving a level of health that would enable them to lead a socially and economically productive life.

The conference will be organized around a series of themes encompassing core public health functions such as population health — health promotion, disease and injury prevention, surveillance, communicable disease control and healthy public policy such as health for Aboriginal Peoples, equity and health for all, innovative approaches to health for all and international health. In each area, the conference will examine the changing perspectives on the issue and the progress made and challenges remaining to achieve health for all.

For a complete program including information on plenary speakers, workshops, posters and abstracts, please visit the CPHA website at **www.cpha.ca**

Canadian Public Health Association
Association canadienne de santé publique

For more information, please contact:

Canadian Public Health Association
Conference Department
400–1565 Carling Avenue
Ottawa, Ontario K1Z 8R1
Telephone: (613) 725–3769
Fax: (613) 725–9826
E-mail: conferences@cpha.ca

Canadian Association of Public Health Dentistry (CAPHD)

The CAPHD has selected the Crown Plaza Hotel in Winnipeg, Manitoba as the site for their course Evidence-Based Dentistry: *The Future is Now*, on **January 27th–28th, 2001.** This course has been designed as an introduction for clinicians who have limited or no contact with evidence-based dentistry (EBD). Through a series of short presentations from members of a panel of nationally and internationally recognized experts, participants will learn the definition of evidence-based dentistry and begin to understand how it can be integrated in their practice to improve the quality of patient care. Particular attention will be given to the tools needed to make EBD practical in a real-life setting.

For further information, please contact:

Anne Bauer, Coordinator
Canadian Dental Association
Telephone: (613) 523–1770, ext. 2205
E-mail: abauer@cda-adc.ca

American Dental Education Association

The American Dental Education Association's 78th Annual Session and Exposition, *Excelling Through Change,* is to be held **March 3rd–7th, 2001** in Chicago, Illinois. The theme *Excelling Through Change* encourages program proposals that provide innovative, creative and perhaps revolutionary solutions to the new challenges facing dental educators. How can the education agenda of these institutions and programs transcend traditional practices to incorporate advancements in technology and new pedagogical and assessment methodologies? The education programming for the 2001 ADEA Annual Session will focus on three daily sub-themes: Vision, Action and Assessment.

ADEA American Dental Education Association

For further information, please contact:

American Dental Education Association
Phone: (202) 667–9433
Fax: (202) 667–0642
Web site:
www.aads.jhu.edu/index.html

International Federation of Dental Hygienists (IFDH)

15th IFDH Symposium Secretariat,
GPO Box 2609,
Sydney NSW 2001 Australia
Telephone: (+61 2) 9241 1478
Fax: (+61 2) 9251 3552
E-mail: reply@icmsaust.com.au

SYDNEY AUSTRALIA 2001
15th INTERNATIONAL SYMPOSIUM ON DENTAL HYGIENE
2-5 AUGUST 2001

CDHA's 12th Annual Professional Conference

The Conference will take place in **Mississauga, Ontario,** from **September 21st–23rd, 2001.**

2001 september 21-23
A Dental Hygiene Odyssey
genesis
CDHA ACHD

Member Communication with CDHA

How do you, as a member of CDHA make your interests and suggestions known to initiate change?

There are a number of avenues available, which include:

1. Bring forward your ideas through your provincial association, and the CDHA Director in your province. They can in turn bring these ideas forward to your national Board. The CDHA Board of Directors is made up of representatives from every Provincial Association who come together two to three times a year to set priorities for national policy.
2. Forward your ideas directly to the national director representing your province. Your CDHA Director needs your input to develop comprehensive policies for the profession.
3. Contact the CDHA Central Office directly through your 1–800–CDHA member line to receive assistance and to have your issues adressed and ideas brought forward.

The CDHA Central Office can be reached at the following:

96 Centrepointe Drive
Ottawa ON K2G 6B1
Tel: (613) 224-5515
Toll Free: 1-800-267-5235 (for members only)
Fax: (613) 224-7283
E-mail: info@cdha.ca
Web Site: www.cdha.ca

The Board of Directors encourages members across Canada to make their interests and issues known to enable the Board to continue to define and develop policies to advance the profession and to meet the members' needs.

Board of Directors 1999/2000

Lynda McKeown . . . . . (Chair)
Salme Lavigne. . . . . (Chair-Elect)
Donna Bowes. . . . . (Past Chair)
Dianne Stojak. . . . . (BCDHA)
Patty Wickstrom. . . . . (ADHA)
Angie Yarnton . . . . . (SDHA)
Natasha Kravtsov . . . . . (MDHA)
Barb Gibb. . . . . (ODHA)
Karen Wolf. . . . . (NSDHA)
Kathleen Trites. . . . . (NBDHA)
Cindy Holden . . . . . (NDHA)
Patti Sinnott-curran . . . . . (PEIDHA)
Chantal Normand . . . . . (Québec)
Susanne Sunell . . . . . (DHEC)
Charlene Hamill . . . . . (FDHRA)

Letter to the Editor

Dear Editor:

I would like to respond to the letter written by Tom Gaines regarding my colleague Mara Sand, featured in the *Probe Journal*, Vol. 34 No.2, page 46.

I am so proud of Mara and what she has done for this very grateful patient. The head and neck and intraoral soft tissue examination she performed took just a few minutes… but extended this man's life by years! Having worked as the dental hygienist at the British Columbia Cancer Agency for the past 10 years, I have encountered numerous patients whose cancer was first noticed by a dentist or dental hygienist performing these examinations.

Statistics for long-term survival (five-year) from oral cancer remain low at approximately 50 percent. This is one of the only cancer statistics that has failed to see an increase in long-term survival over the years due to the fact that oral cancers are usually diagnosed at advanced stages of progression. Oral cancer in its early stages often has no symptoms that are noticed by patients. If detected early, their chance of long-term survival significantly increases. Therefore, I cannot emphasize enough the importance of performing these examinations at each supportive periodontal therapy (SPT) appointment. As well, we as clinicians need to explain to patients why we are doing this examination and how they can perform this examination on themselves (particularly if they smoke and/or consume alcohol).

Thank you, Mara, for taking the time to perform this valuable examination and encouraging Mr. Gaines to seek further evaluation and eventual treatment of his disease.

Sincerely,
Ruth Lunn, Dip.D.H.
Vancouver, BC

UBC Dental Hygiene Update — Part-Time Distance Education for Dental Hygiene in Canada

Historically, the Faculty of Dentistry offered its Dental Hygiene Degree Completion (BDSc) Program leading to a Bachelor of Dental Science degree using traditional face-to-face delivery. Yet, the students in the program had been indicating interest in part-time, distance learning for some time. By 1999, the majority of students enrolled in the BDSc Program were women who indicated study was only part of their overall responsibilities. Many practiced dental hygiene full-time, were raising families and were active in their communities, in addition to part-time study. To complete the program, students from British Columbia and across Canada had to relocate or commute to take the core of required courses, and many chose to complete their electives using distance courses available to them from other faculties and universities.

In the mid-1990s, the Faculty of Dentistry moved its traditional classroom-based DMD curriculum to a Problem-Based Learning model, eliminating the format of many former courses. The BDSc students shared several classes with the full-time dental students. When the shift was made, ending the opportunity for BDSc students to attend their core courses with others in the Faculty of Dentistry, the BDSc Program and the Distance Education and Technology Unit of UBC saw an opportunity to collaborate and form a partnership.

In 1997, work began on the creation of a new concept in the delivery of the core courses in the BDSc Program. The initial design team consisted of Robert W. Priddy, DDS, MSc, FRCD(C), Department of Oral Biological and Medical Sciences, Faculty of Dentistry, Course Author and Tutor; Bonnie J. Craig, Dip.D.H., M.Ed., Co-Project Manager and Dental Hygiene Curriculum Developer; Diane P. Janes, M.Ed., Co-Project Manager and Instructional Developer, Distance Education and Technology, continuing Studies; Anne-Rae Vasquez-Peterson, Web Programmer and Interface Designer, Distance Education and Technology, Continuing Studies.

Using a project management model, with a classical instructional development model, the partnership (with members from both Distance Education and Dentistry) created OBMS 435 Oral Pathology online. This project, the first of three phases, uses the latest technologies of Web and CD-ROM to deliver integrated biological, dental and clinical sciences content to the primarily part-time, dental hygiene students. It is also acting as a template for future core course conversion in the BDSc Program.

Distance learning instructional strategies are different from classroom instructional strategies. Classroom course materials and visuals must be completely reviewed and reconfigured. The role of the course instructor requires that traditional classroom-based instructors embrace a new learning paradigm. Using traditional models of instructional development, the project team worked through decision-making model to arrive at the selection and preparation of content and media appropriate for Web-based, online delivery.

The strength of online instructional design is in the students' interactions with the course content, with each other, and with the faculty member teaching online. Group and individual activities, assignments and on-line discussion using problem-based learning and critical thinking characterize this interaction.

In the fall of 1999, Oral Pathology by distance, Phase 1, was launched and preliminary data is available. Feedback from the 3 credit pilot that occurred over 13 weeks from September to December was very encouraging, and includes some written comments from these ground-breaking students:

> *"...The Oral Pathology course was really a great challenge and I found myself rising to the occasion with the newness of technology and ease of information transfer. I loved it."*

> *"I enjoyed taking this course. I feel it will help me in my profession. I hope more of the core courses for the Dental Hygiene Degree Program will be available in the format."*

> *"Thank you for the opportunity to take a course that I normally couldn't access... I know a new course like this is much work and a big investment by the University. I am definitely thinking of taking the next one on microbiology and immunology next fall."*

> *"Fantastic way to do a course and exams. I am taking two distance education courses now and they seem archaic to send in assignments by mail. I am not as enthusiastic to do these courses as I was with the Oral Pathology online."*

Oral Pathology will again be available online this September. Phase 2, OBMS 405 Oral Microbiology and Immunology is under development and will open online for 13 weeks. Phase 3, OBMS 449 Periodontics has been approved for funding and will be online in September 2001.

Both online courses, Oral Pathology and Oral Microbiology and Immunology are open to non-program dental hygienists who meet UBC admissions requirements. The courses must be taken for academic credit (no audit privileges) and are recognized for 39 credit hours per course by the College of Dental Hygienists of British Columbia. Enrolment is limited. BDSc Program students are given priority. For information, contact:

Barbara Farmer,
Admissions Coordinator, Faculty of Dentistry
Phone: (604) 822–1847
Fax: (604) 822–4532
E-mail: bfarmer@interchange.ubc.ca
Web site: www.dentistry.ubc.ca

DENTAL ABSTRACTS VOLUME 45 #1 JAN./FEB. 2000

Avoid Brushing Teeth Immediately After Exposure to Erosive Food/Beverage

All three articles in this issue of Probe *are reprinted with permission of Dental Abstracts.*
For more information and subscription rates, contact (314) 453–4351 or visit www.mosby.com/periodicals/

INTRODUCTION

Health-minded people may increase their consumption of erosive foods such as fruits, salads, and sport drinks. Such individuals are also likely to be well-motivated in oral hygiene. However, dental erosion may result if toothbrushing is performed immediately after acid attack. A study was performed to determine how long toothbrushing should be delayed in order to minimize loss of tooth substance.

METHODS

Eighty-four enamel specimens were prepared from extracted human premolars, immersed in citric acid for 3 minutes, and attached to intraoral appliances. Seven volunteers wore the appliances for 0, 30, or 60 minutes after the enamel was exposed to acid. Volunteers brushed the enamel specimens for 30 seconds with toothpaste. Toothbrush abrasions of the enamel specimens was measured.

RESULTS

When enamel was brushed immediately after acid immersion, the mean loss of tooth substance was 0.285 0.141 m. After 30 and 60 minutes of intraoral exposure, tooth substance loss was 0.224 0.087 m and 0.195 0.075 m, respectively. The 60-minute value was significantly smaller than both the 0- and 30-minute values.

DISCUSSION

patients who are at risk for erosive tooth wear should avoid brushing their teeth for at least 60 minutes after consuming erosive food or drink. Other means of preventing erosion may include rinsing with water or fluoride solutions or chewing gum after acidic exposures. This study used only soft toothbrushes; patients who use harder bristles might experience greater abrasion. More study is needed to evaluate the risk and prevention of toothbrush abrasion in patients with eating disorders.

CLINICAL SIGNIFICANCE

When no other preventive measures are taken after consumption of erosive food or drink, patients at risk for erosive tooth wear should avoid brushing their teeth for at least 1 hour to prevent toothbrush abrasion.

Jaeggi R. Lussi A: Toothbrush abrasion of erosively altered enamel after intraoral exposure to saliva: An in situ study. *Caries Res 33:455–461, 1999*

Reprints available from A Lussi, Klinik für Zahnerhaltung, Freiburgstrasse 7, CH–3010 Bern, Switzerland; fax: 41–31–632–98–75

DENTAL ABSTRACTS VOLUME 45 #2 MAR./APR. 2000

Impaired Sense of Taste and Smell in the Elderly

INTRODUCTION

Age-related oral changes, diseases, medications, and dental problems may depress a geriatric patient's sense of taste and smell. As a result, the patient may find food tasteless. The causes of and solutions to this problem are reviewed.

TASTE AND SMELL

Degeneration of taste buds and a reduction in the number of taste buds produces a diminished sense of taste. The sense of taste is strongly influenced by smell perception. Olfactory cells are renewed more slowly or not at all in older adults, impairing the sense of smell. Olfactory acuity may be more affected by aging than the sense of taste.

CAUSES

Alzheimer's disease, Parkinson's disease, chronic liver or kidney disease, endocrine disorders, nutritional deficiencies, and localized ear, nose, or throat ailments may interfere with

the sense of taste and smell. Hundreds of drugs have also been implicated in altered taste sensation. Oral conditions related to altered chemical senses include xerostomia and decreased salivary flow, periodontal disease, burning mouth syndrome, denture stomatitis, and halitosis. Removable dentures, toothpastes, denture adhesives, and mouthwashes may also decrease taste of smell. In some cases, patients are unaware of changes in taste and smell until a new prosthesis draws their attention to their mouths.

CLINICAL MANAGEMENT

If impaired taste is related to reduced salivary flow, artificial saliva, frequent mouthrinses, or sialogogues may be beneficial. Instead of flavoring food by adding salt and sugar, patients should be advised to use spices, seasonings, and such flavoring agents as vanilla or orange; these flavors will provide taste and smell stimuli. Patients may enjoy eating more if they include a variety of textures and flavors in their diet. Smokers should be strongly encouraged to stop smoking, as smoking diminishes the taste of food. Older adults should also brush their tongues twice daily with a soft toothbrush or dry gauze pad; eating hard bread, raw vegetables, and fibrous meats can also remove tongue coatings.

CLINICAL SIGNIFICANCE

To maximize their ability to taste and smell food, elderly patients should avoid smoking, clean their tongues regularly, and use interesting seasonings to flavor their food.

Winkler S, Garg AK, Mekayarajjananonth R, Bakaeen LG, Khan E: Depressed taste and smell in geriatric patients.
J Am Dent Assoc. 130:1759–1765, 1999

Reprints available from S Winkler, Temple Univ. School of Dentistry, Dept of Restorative Dentistry, 3223 N Broad St. (600–00), Philadelphia, PA 19140

DENTAL ABSTRACTS VOLUME 45 #2 MAR./APR. 2000

NHANES III Data Lend Further Support to Connection Between Periodontal Disease and Heart Attack

BACKGROUND

Coronary heart disease accounts for 20% of all deaths in the United States. Epidemiologic data support an association between heart disease and periodontal disease. The results of a cross-sectional study carried out using data from the third National Health and Nutrition Examination Survey (NHANES III) are reported.

METHODS

The study included 5,564 adults aged 40 years and older who underwent complete periodontal examinations and provided self-reported information on heart attack history. The data were controlled for sociodemographic variables and established cardiovascular risk factors, and the association between periodontal attachment loss and history of heart attach was analyzed via multiple logistic regression.

FINDINGS

The mean per-person percentage of sites with attachment loss was 15.0% and 3.7% of all participants reported that a doctor had told them they had experienced a heart attack. In the final multivariable model, there was strong and significant association between the extent of attachment loss and history of heart attach ($P = 0.02$). After adjusting for covariables, for each 10% increase in percent of sites exhibiting attachment loss, the odds ratio for the past heart attack was 1.14 (i.e., a 14% increase in the odds of heart attack).

DISCUSSION

The association between the extent of periodontal attachment loss and a heart attack history persisted even after controlling for classic cardiovascular risk factors. As the percentage of sites with attachment loss increased, so did the odds of having had a heart attack. It is not possible to confirm a temporal relationship between the two types of disease based on the NHANES III data. Periodontal and cardiovascular diseases share many of the same risk factors, and they appear to have common pathogenic mechanisms relating to inflammatory mediators.

CLINICAL SIGNIFICANCE

This study supports an association between periodontal disease and coronary heart disease, but more research is required to confirm the temporal relationship and determine the causes behind this association.

Arbes SJ Jr, Slade GD, Beck JD: Association between extent of periodontal attachment loss and self-reported history of heart attack: An analysis of NHANES III data.
J Dent Res 78:1777–1782, 1999

Reprints available from SJ Arbes Jr, Ctr for Oral and Systemic Diseases, UNC School of Dentistry, Campus Box #7455, Chapel Hill, NC 27599–7455

CAMPAIGN 2000...*continued from page 168*

request an order form by calling the CDHA at (613) 224-5515 or by e-mail at **info@cdha.ca**

Every year, more and more dental hygienists commit to getting involved in the most important event of our profession. We challenge each one of you to get inspired, to start planning and to make a big splash for NDHW™ this year in your community!

Sponsor Support

Many of the NDHW™ activities we undertake would not be possible without the support of our sponsors. By supporting NDHW™, our sponsors show their support for our profession and for our efforts to inform Canadians. This year, we are pleased to welcome back Warner-Lambert and 3M, who also contributed to a great year in 1999. We are also proud to announce the participation of a new sponsor: Oral-B. We're continually pursuing potential sponsors in other categories. Stay tuned for more updates.

Countdown to 50 Years of Service to Canadians

Beginning in January 2001, dental hygienists across Canada will be celebrating a truly historic event — the 50th anniversary of service to the Canadian public. The anniversary is an ideal time to take stock of all that we do to help keep Canadians' smiles healthy. It's also an opportune time to step forward and sanction ourselves as genuine professionals.

Through Campaign 2000 and special activities during NDHW™, the CDHA and our Provincial Partners are working together to raise awareness of our profession and its impact on the oral health of the Canadian population. As a team, and with the public's trust and support, we can take our rightful place as the *Prevention Professionals.*

Plans are currently underway to make our profession's 50th anniversary a year-round celebration. A number of events and activities will take place across the country, culminating with our Annual General Meeting in Toronto in September 2001. The location is fitting, given that University of Toronto is the site of the first dental hygiene program in Canada. This special celebration has the potential to involve all dental hygienists in the country and the millions of Canadians who benefit from our expertise.

We encourage each of you to get involved and start counting down to 50 years of service to Canadians. You will find information and updates on activities in future issues of *Probe* and on the CDHA's web site (**www.cdha.ca**). We also want to know what you're planning to do to mark the 50th anniversary — share your ideas with us. Fax us at (613) 224-7283 or email us at **info@cdha.ca** — Together, we can celebrate 50 years of success and work together for another great half-century!

This snapshot should give you an idea of what's in store for Campaign 2000. It time for us to all step forward and recognize that we are educated, regulated and registered professionals, and that we are worthy of the public's trust. We encourage each of you to get involved. Start by celebrating NDHW™ in your community. Then, keep up the momentum generated by the week — start counting down to the 50th anniversary of the dental hygiene profession in Canada.

Rapport sur la campagne de l'an 2000

Préparez-vous pour la Semaine nationale de l'hygiène dentaire[MD]

C'est à nouveau le moment de célébrer notre fierté envers notre profession et d'expliquer à la population canadienne les efforts que nous déployons pour qu'ils puissent parler, manger et sourire aisément tout au long de leur vie.

La Semaine nationale de l'hygiène dentaire[MD] (SNHD) de l'an 2000 aura lieu du **15 au 21 octobre**. L'Association canadienne des hygiénistes dentaires, en compagnie de nos partenaires provinciaux, vous préparons la meilleure semaine que nous n'ayons jamais connue. Cette année, nous aurons plus de moyens que jamais pour rejoindre la population canadienne d'une manière efficace et impressionnante. Nous avons préparé des annonces publicitaires, des messages d'intérêt public, une trousse pour vous aider à planifier les activités de la Semaine nationale dans votre coin de pays, ainsi que des feuilles de conseils pratiques à distribuer à vos clients.

Le point de mire de la SNHD[MD] de l'an 2000 sera la portée du travail des hygiénistes dentaires. Nous devons faire comprendre à la population canadienne que nous faisons bien plus que nettoyer les dents! Nous jouons un rôle important dans le maintien d'une bonne santé et offrons à nos clients des conseils et des renseignements sur les liens entre la santé buccale et la santé *globale.*

Nous ferons la promotion de notre profession par de **nouvelles publicités dynamiques** dans deux des plus grands périodiques canadiens lus par des millions de personnes, c'est-à-dire *L'actualité et Maclean's.* Les annonces publicitaires paraîtront dans le numéro du **15 octobre** de *L'actualité* (en vente dès le 29 septembre) et dans le numéro du **16 octobre** de *Maclean's* (en vente dès le 9 octobre). N'oubliez pas de vous en procurer des exemplaires et de les mettre bien en évidence!

Dans le cadre de la Campagne de l'an 2000, nous avons aussi produit des messages nationaux d'intérêt public, en français et en anglais, qui seront diffusés par plus de 430 stations de radio au pays et rejoindront sans doute des centaines de milliers de Canadiennes et Canadiens. Nous demanderons aux stations de radio de diffuser ces messages non seulement au cours de la SNHD[MD] mais également tout au long de l'année.

Nous avons aussi préparé une **trousse de planification de la campagne : *un guide pour la promotion de la SNHD[MD]***. La trousse, qui sera envoyée à chaque province, propose des moyens et des conseils pour maximiser l'incidence de la Semaine. Dans la section qui s'adresse aux membres individuels, vous trouverez des suggestions et des modèles afin que chacun d'entre vous puisse faire la promotion de la Semaine dans sa collectivité. Vous pouvez obtenir un exemplaire à notre site, à l'adresse **www.cdha.ca**

Dans le cadre de la campagne de l'an 2000, nous avons produit une série de **feuillets de conseils pratiques aux consommateurs**. Rédigés par un comité national de planification, les feuillets font valoir que les hygiénistes dentaires sont de véritables professionnels de la santé et offrent aux consommateurs des renseignements sur les liens entre la santé buccodentaire et les maladies cardiaques et pulmonaires, le diabète et les cancers de la bouche. Les feuillets sont conçus de façon à ressembler à un carnet d'ordonnances. Nous vous invitons à les distribuer à tous vos patients car ils renferment des renseignements précieux. Vous pouvez même y inscrire des recommandations personnalisées pour chacun

CAMPAGNE DE L'AN 2000...*suite à la page 197*

NEW from Alcon ENT

MOUTH KOTE®

Long-Lasting Oral Moisturizer

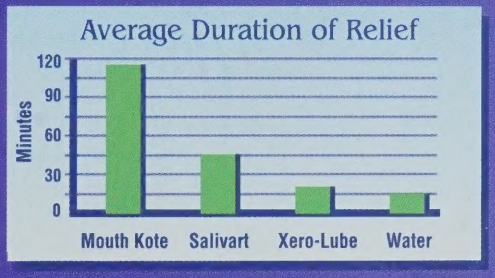
with Natural Yerba Santa

Patients preferred Mouth Kote 4 to 1

In a double-blind clinical trial[1,2], 83% of patients preferred Mouth Kote to Xero-Lube®, 78% preferred Mouth Kote to Salivart® or Water. The remaining patients stated no preference; none of the patients preferred the other products.

Long-lasting relief

In a double-blind crossover clinical trial[1,2], Mouth Kote provided the longest lasting relief for post-radiation and autoimmune disorder patients with dry mouth.



Natural relief from Dry Mouth

Natural mucopolysaccharides, extracted from the Yerba Santa plant, mimic the glycoproteins in saliva by holding the aqueous component in contact with the epithelial cells.

Great Lemon-Lime Taste, Sugar and Alcohol Free

Please call 1-800-268-4574 for professional samples

Distributed in Canada by: Alcon Canada Inc. • 2145 Meadowpine Blvd., Mississauga, Ontario, L5N 6R8 • 1-800-268-4574

Registered trademark of Parnell Pharmaceuticals, Inc. Used with permission by Alcon ENT.
Salivart is a registered trademark of Gebauer Company. Xero-Lube is a registered trademark of Scherer Laboratories, Inc.

1. Data on file, Corporate Medical Department, Parnell Pharmaceuticals, Inc.
2. Rhodus, N.L.: The Effectiveness of Artifical Salivas in Relieving Xerostomia as Assessed by Mucoprotective Relativity., J Dent Res 70:407, 1991. Abstract 1133.

CDHA ACHD
partnerships in health
BROADENING OUR PROFESSIONAL HORIZONS

11TH ANNUAL CDHA PROFESSIONAL Conference REVIEW AT A GLANCE

...by 2000 Conference Chair Dorothea Hoffman

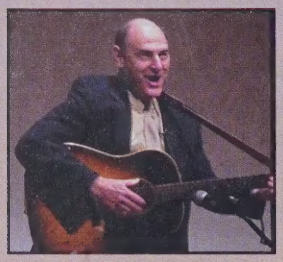
"Reaffirmed why I was attracted to the profession in the first place."

During our **Partnerships in Health Conference** in **Victoria, June 9–11,** from the welcome ceremony by Ethel Fitzpatrick and the Dancers and Singers of the Kwakwaka'wakw Nation, until Dr. Martin Collis' closing remarks, I was aware of the unique sense of our profession in the group of dental hygienists around me.

Opening Ceremonies with Ethel Fitzpatrick and the Dancers and Singers of the KwaKwaKa'waKw Nation

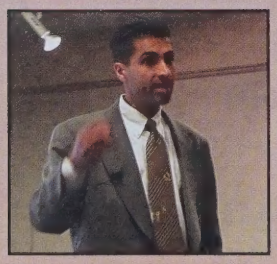
Martin told us that the word welcome means "coming in wellness". "When we're talking wellness, we're talking wholeness, we're talking connectedness, and we're talking partnership: partnership in health, connectedness in community, and connectedness of mind and body." We spent the weekend exploring this connectedness.

"Best conference I have attended in a few years."



Keynote address by Dr. Martin Collis

As I spoke to dental hygiene colleagues, I was impressed by the characteristics and ideals that define us as dental hygienists. We are concerned about increasing access to care by those groups that are underserviced, including those in residential care, native communities, and developing countries. Barb Heisterman reminded us that in residential care, we need to place high priority on what the nursing home needs, and what the residents want, not the care we feel ought to be delivered. We need to be advocates for the people we serve. And we must remember that "the demand for quality of life goes on until the very last breath." Shafik Dharamsi challenged us to think of how we define ourselves as dental hygienists. Though we have good intentions as health care providers, our goal must be to enable people to achieve their own health. "There has been a shift from caring for people to working with people."



Dr. Dharamsi sets a challenge to all dental hygienists to define themselves

Fern Hubbard said that as part of the dental team, there has been an evolution of the dental hygienist from treatment provider to wellness educator. Joanne Clovis reminded us that to prevent oral cancer "it's absolutely critical we partner with other professionals and also with the public."

Diannne Stojak commended us on our knowledge and skills and our ability to work within an interdisciplinary health care team. I think the thirst for knowledge extends beyond the search for CE credits. Dr. Peter Bennett had a hard time proceeding with his presentation at times, because we asked so many questions because we want to know. Dr. Sonia Leziy urged us to educate ourselves on new periodontal assessment techniques. She expressed her appreciation for the dental hygienist as the best vehicle for "educating and bringing the general practice into the new millennium" about how periodontal treatment has evolved in the last ten years. Bonnie Craig assured us that we will be extending our knowledge through the Internet soon, with courses on Oral Pathology, Oral Microbiology and Immunology, and Periodontics.

Perhaps my strongest impression of the registrants, however, was that we were so happy to be attending the conference. Dental hygienists were so interested in talking to each other that it was difficult to get them to go upstairs for coffee and muffins!

"Unike dental conferences, all the information was pertinent to my work."

Dorothea Hoffman, 2000 Conference Chair

All smiles following registration to CDHA's Professional Conference

CDHA's Closing Ceremonies

The Queen (played by Lois Waters) welcomed delegates to the President's Reception at the Royal BC Museum

I would like to extend a special thanks to Chris Sternig, Stephanie Ellis and Joanne Sawchuk for the many hours they spent in conference preparation. Gina Wohlgemuth did an exceptional job arranging our social events. Thank you Gina for two memorable evenings. Thanks goes out to each speaker for their enthusiasm and care they spent on their presentations. And most of all, thank you to every registrant for making this such a memorable conference.

In the words of Joanne Clovis, as you examine your practice, you may wonder at your own level of professional performance. Among the dental hygienists who attended their national conference, I was aware of the sense of responsibility, professionalism, caring and pride. In Cindy Ewan's words, "I am one of Canada's dental hygienists, and I am a professional."

"Excellent lectures and social events."

CDHA/ORAL-B DENTAL HYGIENE STUDENT SCHOLARSHIP RECIPIENT

Michel Christl, Business Manager, (Canada) of the Professional Products Group for Oral-B Laboratories presents Heather Pernisie with the CDHA/Oral-B dental hygiene student scholarship. Ms. Pernisie from Kelowna, BC was recently awarded with the scholarship for her humanitarian adventure in Bolivia and her academic involvement in the profession of dental hygiene.

The Rant of the Canadian Dental Hygienist

By Cindy Ewan, Executive Director, BCDHA

I am not a dentist or a dental assistant.
And I am not bothered by putting my hands in other people's mouths.
And, no, I don't want to look at your sore tooth after the dinner party tonight.

I have practice standards and a code of ethics.
I practice dental hygiene — not dentistry.
And I do not want to be referred to as the "girl who cleans teeth".
I can proudly say "My profession is reaching the underserved groups in this country".

I believe in teamwork — not control.
Scope of practice — not delegation of duties.
And that dental hygiene diagnosis is something I am allowed to do.

I do work hard.
I am worth what I am paid.
And it is pronounced "Hygienist" — not hygeeenist — hygienist.

Dental hygienists have been in Canada for 50 years.
The only profession primarily concerned with the prevention of oral disease.
And an essential part of health care in this country!

I am one of Canada's dental hygienists.
And I am professional!

CDHA gratefully acknowledges the donations from British Columbia and the following companies at this year's conference

Seacoast Expeditions
Spyhopper Whate Watching
Prince of Whales
The Cheesecake Café
Elephant & Castle Restaurant
Harbour Canoe Club
The Keg
Wharfside Eatery
Milestone's Restaurant
Café Mexico
Munroe Books
Chapters
Haute Cuisine
Chintz & Company
Boom Boom Club
Sweetwaters
Bernard Callebaut Chocolaterie
The Bay
Scallyways Design
Black Beauty Carriage Tours
Undersea Gardens
IMAX Theatre
Maritime Museum of BC
Butchart Gardens
Romance Shop
Roy Henry Vickers Gallery
Stephen Lowe Gallery
Cowichan Trading Company
Neptune Seafood Galley
St Jean's Seafoods
Professional Dental Hygiene Services

CDHA would also like to thank all its commercial exhibitors

Ash Temple Limited
Block Drug Company (Canada) Ltd.
Colgate Oral Pharmaceuticals
Conair
Dairy Farmers of Canada
Designs for Vision, Inc.
Dentalman International
Dentsply Canada
Hartzell and Son, G.
Henry Schein Arcona
Hu-Friedy
John O. Butler Company
Knoll Pharma Inc.
Kodak Canada Inc.
Oral-B Laboratories
3M Canada Company
PDT Incorporated
Perio Works International
Premier Dental (Canada)
Pro-Dentec Canada
Septodont of Canada Inc.
Sonicare
Warner Lambert (Listerine)
Water Pik Canada
WMS Enterprises

Partnerships in Health
CDHA's 11th Annual Professional Conference

June 9–11, 2000— Victoria, British Columbia

Organizers have made arrangements for audio recording of sessions. If you missed something or want to share some important topics with colleagues, use this as an order form. Most of the following will be available. Coverage is on 60 or 90 minute cassettes at $10.00 each with "b" tapes at $7.00.

Sessions

1a___1b___	Panel Discussion: *"Opening Doors to Residential Care"* — Anita Vallée/ Susan Nye/Maxine Borowko/Yvonne Smith/Dianne Stojak/Fern Hubbard
2 n/a	Panel Discussion: *"Strategies for Achieving Self-Regulation"* — Fran Richardson/Nancy Harwood/Charlene Hamill/Brenda Walker
3___	"Keynote Address: Healing, Humour and High-Level Wellness" — Dr. Martin Collis
4a___4b___	"Y2K Compatible Periodontics : Bring Periodontal Therapy Into the New Millennium" — Dr. Sonja Leziy
5a___5b___	Dentinal Sensitivity and Desensitization" — Juliana Kim/Dr. David Alexander/ Dr. Christopher Zed
6___	"Baby Bottle Tooth Decay Among First Nations: Taking a Culturally Sensitive Approach" — Sharon Melanson
*7___	"Achieving Successful Interaction With First Nation Clients in a Private Practice Setting" — Sherry Saunderson & Ethel Henderson; "A Water Fluoridation Pilot in Beijing, China" — Louanne Keenan
8a___*8b___	"Human Needs Theory and Tobacco Cessation: The Role of the Dental Hygienist" — Margaret Walsh
*9___	"Oral Manifestations of Nutritional Disease" — Dr. Peter Bennett
*10___	"Nutritional Medicine and Dentistry" — Dr. Peter Bennett
11a___11b___	"Zeroing In on Site-Specific Therapies" — Marilyn Goulding
12___	"Ergonomics and the Dental Office" — Peggy McCann
*13___	"Who Generated the Boom?" — Barb Heisterman
14___	"Use of Fluoride in the Dental Practice" — Dr. Fiona Collins
*15___	"How to Develop a Personal Financial Plan" — Dave Charlebois & Anita O'Sullivan
16a___16b___	"Partnerships to Prevent Oral Cancer" — Joanne Clovis
17a___17b___	"Promoting Oral Health Care in Developing Countries: Oppotunities to Serve" — Shafik Dharamsi
19___	Closing Address: "Healing, Humour and High-Level Wellness" — Dr. Martin Collis; Dental Hygiene Rant — Cindy Ewan
*X___	Overflow coverage from #7 (:10), #9 (:05), #10 (:03), #8b (:06), #13 (:03), #15 (:14)
___	Full Set (25 tapes) @ $225.00

Please check off sessions wanted. To order by mail, add $1.30 per tape for handling plus 7% GST. Ontario residents, also add 8% PST. Send this form, along with payment (cheque payable to "Conference Tape") to:

CDHA Conference Tape
8 Woodburn Drive,
Ottawa, Ontario K1B 3A7
Tel.: (613) 824–2583 Fax: (613) 824–2584
E-mail: contape@cyberus.ca

CONFERENCE TAPE
8 WOODBURN DR., OTTAWA K1B 3A7

Name _____	Number of tapes _____	VISA _____
Address _____	Cost of tapes _____	Mastercard _____
City _____	Handling costs _____	Expiry date _____
Province _____	GST _____	Signature for Credit Card Order
Postal code _____	PST (Ontario residents only) _____	X _____
	Total _____	Cheque _____

CAMPAGNE DE L'AN 2000...*suite de la page 192*

de vos clients. Commandez vos feuillets dès maintenant en remplissant le formulaire qui vous a été envoyé. Vous pouvez aussi passer une commande par téléphone au **(613) 224–5515** ou par courriel à l'adresse **info@cdha.ca**

Chaque année, de plus en plus d'hygiénistes dentaires participent à l'événement annuel le plus important de notre profession. Nous vous lançons le défi, de participer à fond, de prévoir des activités et de faire de la SNHD[MD] un événement dont se souviendra toute votre collectivité!

Remercions nos commanditaires

Nous ne pourrions entreprendre autant d'activités au cours de la SNHD[MD] sans le soutien de nos commanditaires. Par leur générosité, nos commanditaires démontrent qu'ils appuient notre profession et les efforts que nous déployons pour informer la population canadienne. Cette année, nous sommes heureux de bénéficier à nouveau de l'appui des sociétés Warner-Lambert et 3M qui avaient joué un rôle de premier plan en 1999. Nous sommes aussi heureux d'annoncer la participation d'un nouveau commanditaire : Oral-B. Nous sommes toujours à la recherche de commanditaires dans d'autres catégories. Nous vous tiendrons au courant.

Compte à rebours vers 50 ans de service à la population canadienne

Dès janvier 2001, les hygiénistes dentaires partout au Canada célébreront un événement historique sans précédent, leur 50e anniversaire de service à la population canadienne. Cet anniversaire est l'occasion idéale de réfléchir à tout ce que nous faisons pour leur assurer un sourire en santé et de nous affirmer fièrement en tant que véritables professionnels de la santé.

L'Association canadienne des hygiénistes dentaires et nos partenaires provinciaux travaillent ensemble pour sensibiliser le public à notre profession et à son importance pour la santé buccodentaire par l'entremise de la Campagne de l'an 2000 et de la SNHD[MD]. Grâce à notre travail d'équipe, et à la confiance et au soutien du public, nous pouvons fièrement prendre la place qui nous revient de droit, celle des *professionnels de la prévention*.

Nous élaborons actuellement des plans pour faire de notre 50e anniversaire une fête qui durera toute l'année. Nous prévoyons des activités partout au pays, que couronnera notre assemblée générale annuelle à Toronto en septembre 2001. Nous avons choisi Toronto car le premier programme de formation d'hygiénistes dentaires a été mis sur pied à l'Université de Toronto. Nous espérons bien faire participer à cette célébration sans précédent tous les hygiénistes dentaires du Canada et les millions de personnes qui bénéficient de leurs services.

Nous vous encourageons à participer aux activités et à débuter le compte à rebours de nos 50 années de service au public canadien. Vous trouverez des renseignements supplémentaires et des mises à jour dans les prochains numéros de *Probe* ainsi qu'à notre site (**www.cdha.ca**). Laissez-nous savoir ce que vous prévoyez faire pour marquer le 50e anniversaire! Communiquez avec nous par télécopieur au (613) 224-7283 ou par courriel à **info@cdha.ca** Célébrons ensemble nos 50 années de succès et préparons-nous à un autre demi-siècle palpitant!

Cet article vous donne un avant-goût de la Campagne de l'an 2000. L'heure est venue de sortir des rangs, et de faire valoir que nous sommes des professionnels formés, réglementés et accrédités qui méritons la confiance des Canadiennes et des Canadiens. Nous vous encourageons à participer à cet effort en célébrant la SNHD[MD] dans votre collectivité. Puis, nous maintiendrons ensemble l'élan de la Semaine pour entamer le compte à rebours du 50e anniversaire de la profession d'hygiéniste dentaire au Canada.

Perio REPORTS

Bimonthly publication designed for dentists and dental hygienists concerned about their patient's periodontal health. Each issue summarizes periodontal research of specific interest to clinicians. Easy to read format keeps you up to date on the latest research findings.

Journals reviewed for **Perio REPORTS** include:

Journal of Periodontology
Journal of Clinical Periodontology
Journal of Periodontal Research
Journal of Dental Research
Periodontal Abstracts
Quintessence International
JADA, JADHA

☐ Please send sample issue for my review

☐ $48 one-year ☐ $84 two-year

Name_____
Address_____
City_____Prov._____Postal Code_____

Mail to:
Perio REPORTS, P.O. Box 52090
311 - 16th Ave. NE, Calgary, Alberta T2E 8K9

BEAUTIFUL BRITISH COLUMBIA

Beautiful North Vancouver Office seeking dental hygienist for maternity leave: Our well-established G.P. practice is looking for a registered dental hygienist for a 6-month maternity leave starting **November 25, 2000.** The lucky candidate will work in a wonderfully modern office with fun, caring staff and a 5 day weekend each month! You should have pizzazz and expertise that compliments your patient care commitment. This position may lead to full time employment. For more information, please call **604–988–8168** or fax your resume to **604–983–8168** or mail it to **Dr. Gail Landsberger, 106 West 3rd Street, North Vancouver, BC V7M 1E8**

WWW.DENTAL-LOCUMS.COM

www.dental-locums.com is a free service, which connects practices, dentists and dental hygienists for long and short-term job positions. An online form allows you to list your details or you can fax them to: **604–922–8407**. Practices or individuals can also have their own page linked to this site.

DENTAL-AID PERSONNEL BRITISH COLUMBIA

Dental-Aid Personnel is a professional staffing service providing, permanent and temporary relief to Dental offices since 1987. We have an extensive growing client base reaching from Greater Vancouver through the Fraser Valley and are continually seeking dedicated and professional dental hygienists.

For more information, phone **604–524–3904; fax 604–925–9223, e-mail: jchung@planeteer.com**

NORTH SHORE DENTAL TEMPS INC., BRITISH COLUMBIA

"North Shore Dental Temps Inc.," services the entire Greater Vancouver area and Vancouver Island. We are looking for qualified dental hygienists for a variety of part time and full time positions.

For further details, phone **604–990–8777, fax 604–990–8762, e-mail: nsdentaltemps@telus.net**

PRACTICE IN THE CAYMAN ISLANDS

We are looking for a dental hygienist able to work well with four other staff members. Must have experience in using a windows based dental program, and be able to book and bill patients. Must be able to share in all duties, including pouring models, fabricating moth guards and bleaching trays. Must be able to handle advanced perio cases, sealants, bleaching and debanding of ortho patients. The use of an intra-oral camera along with digital x-rays is mandatory. We work as a team and extend the invitation to a dental hygienist with a minimum of two years experience. Please forward resume, including phone number, e-mail address and fax number to: **Dr. Larry Tharp, PO box 10116 APO, Grand Cayman BWO**.

MOBILE DENTAL EQUIPMENT FOR SALE

M-Dec System. "Port-op III" model with wheels. Complete with instrument/supply case and portable dental chair. Excellent condition. Suitable for residental care for hygienists or dentists. **Please call 604–309–2046.**

BRANDON, MANITOBA

Dental hygienist required for a busy 4-dentist office in Brandon, Manitoba. Send resume to **West-Manitoba Dental Group, 2915 Victoria Avenue, Brandon, Manitoba R7B 2N6, ATTN: Colleen or fax to 204–728–9108**.

CRESTON, BRITISH COLUMBIA

Dental hygienist needed 2 days per week in Creston, BC to cover 6 month maternity leave. Starting date, **January 2, 2001**. Please contact: **Dr. Rob Armstrong, 611 Cavell Street, Creston, BC V0B 1G4. Fax 250–428–2691**

JOB OPPORTUNITIES IN SWITZERLAND

Do you like to travel? Many openings for adventurous dental hygienists in Switzerland. Good salary, 4 weeks paid vacation. One year experience an asset. Contact me for more information. **Pia Kolliker Dental Hygienists Overseas, Placement Service by phone at 250–493–8827 or e-mail: riehenbc@home.com**

L.A. CONSULTING BY LINDA AMBROSE, RDH., S.T., R.M.

Shiatsu, Reiki, Vitamin Counselling, Energy Balance and Intuitive Insight of Life issues. **By appointment — 416–467– 6363.**

Classified Ad Rates

Fifty (50) words or less, $25.00 (plus 7% GST).
Additional words: $0.50 per word (plus 7% GST).

Closing date for the receipt of copy is approximately one month prior to publication date:

DEADLINE	ISSUE	CIRCULATION DATE
December 10	January/February	January 15
February 10	March/April	March 15
April 10	May/June	May 15
June 10	July/August	July 15
August 10	September/October	September 15
October 10	November/December	November 15

Advertisers' Index

ALCON CANADA 193
BUTLER ..... IFC
COLGATE 164
D-SHARP 185
DYNAMIC SEMINARS 185
HU-FRIEDY ..... OBC
KNOLL PHARMA 174–175
ORAL-B ..... TOC
PERIO REPORTS 197
SULCABRUSH ..... IBC
ORAL-B 166
WATERPIK FLOSSER 186

Sulcabrush® Inc.

Get a handle on healthy Gums™ !

NOW Available at:

WAL-MART®

WE SELL FOR LESS *every day!*

Recommended for patients who have difficulty flossing!

Photocopy this page, cut here | place this reply card in an envelope and mail to the address below

- Please send me **FREE COUPONS** to present to my patients to help them identify and purchase the ***Sulcabrush®*** at **WAL-MART**.

Free *Sulcabrush® travel* when your patients shop at **WAL-MART** (Details on coupon - Offer expires March 31/01)

DDS Name _____

RDH Name _____

Home ◄(Circle one only)► Dental Office

Address _____

City _____

Province _____ Postal Code _____ Tel: _____

1 800 387 8777

16 Brisbane Road, Downsview
Ontario, Canada M3J 2J8

YIELD

MERGING QUALITY AND SHARPNESS

When you're searching for the highest quality scalers, all signs lead to Hu-Friedy. Hu-Friedy scalers are the sharpest in the business, and they stay sharp longer. In fact, dental professionals use more Hu-Friedy scalers than all other brands combined. So take the high road, and follow the leader.

HU-FRIEDY DENTAL

To order, contact your dealer, or call 1-800-HU-FRIEDY

PROBE

SCIENTIFIC JOURNAL

November/December 2000 vol. 34 no. 6

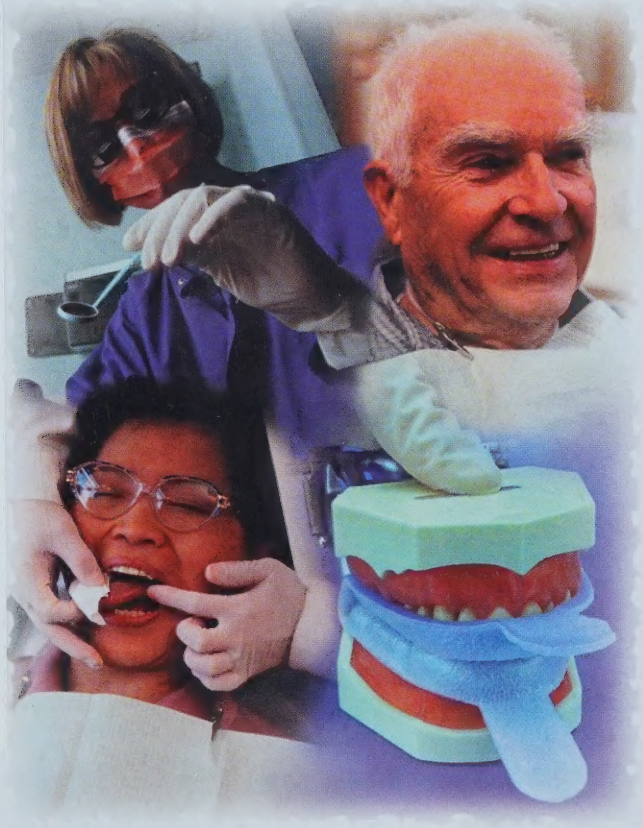
AX 8788

CONTINUING EDUCATION AND CHANGES IN PRACTICE:
A SURVEY OF DENTAL HYGIENE STUDY CLUB PARTICIPANTS

NOT ALL TRAYS ARE CREATED EQUAL:
AN ANALYSIS OF FLUORIDE TRAY FIT

THE PRESERVATION OF NATURAL DENTITION:
HOW SHOULD WE ADVISE OUR CLIENTS

DENTAL LIBRARY
UNIVERSITY OF TORONTO
124 EDWARD ST.
TORONTO M5G 1G6
ONTARIO, CANADA



CDHA ACHD
THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

Put the genius of Dr. Bass into the *hands* of your patients.

BUTLER GUM®

NEW

PULSE® PLUS

POWER TOOTHBRUSH

The Pulse Power toothbrush can help your patients brush more effectively. It's the only power toothbrush that simulates the motion of the Dr. Bass brushing technique. The *unique "pulsating" action* combined with the Butler GUM *raised centre rows bristle trim design*, has been *proven to remove plaque below the gumline*. And patient compliance is almost guaranteed because Pulse is so easy to use…just like a manual toothbrush.

And now available… a new rechargeable model – the Pulse Plus. All the great features of the original model combined with a convenient *cordless charger and night-light*, and a new *slimline handle* for better control.

More power to the Dr. Bass technique. More power to your patients.

- *Cleans below the gumline…* to loosen and remove plaque that can cause periodontitis

- *Cleans gently between the teeth…* removing minute particles that could lead to caries and gingivitis

- *Cleans hard-to-reach posterior surfaces*

Unique cordless charger with night light

To Order Call 1.800.265.8353

or See Your Butler Sales Representative

On Sale Now! For a limited time only - as low as **$29.99** ea.

©2000 John O. Butler Company, A Sunstar Company C00113

EDITORIAL: FROM BRICKS TO BUILDINGS... DENTAL HYGIENE SCIENCE

BY LAURA MACDONALD, Dip. D.H., B.Sc.D. (Dental Hygiene), M.Ed.

Associate Professor, School of Dental Hygiene, Faculty of Dentistry, University of Manitoba

Just the other day, I was leading a discussion with the senior dental hygiene students at the School of Dental Hygiene, University of Manitoba. I was paving the way for the students to think about their reactions to two models of dental hygiene practice, two theories behind why dental hygienists do what they do. The two models were the Human Needs Model (Darby and Walsh, 1995) and the Oral Health Related Quality of Life Model (Williams et al., 1998). All dental hygiene actions arise from somewhere, —something, —somehow, —sometime; and so did these two very articulate, encompassing models of dental hygiene practice. They represent the paradigm of dental hygiene in North America. Both consider the dental hygiene paradigm concepts of client, health/oral health, environment and dental hygiene actions, but they do so from different perspectives. From my interpretation of the models, the Human Needs Model is client-focussed and the Oral Health Related Quality of Life Model is focussed on health/oral health. They have different philosophical approaches to dental hygiene practice, but both are scientifically-grounded and both are based on theory development.

Theory, models, paradigms—these are words that pack a lot of clout, but they aren't words typically used by the average clinician, dental hygienist or otherwise. These words belong to the realm of science—that world out there that exists, is real, but doesn't really impact on every day lives of clinicians providing health services to the people that they serve. Or does it? Indeed, without the science behind the clinician, the clinician wouldn't be providing the health service. From the practice comes the science; and from the science comes the practice. They are not mutually exclusive; they are mutually interactive, in fact, synergistically so. Paradigms, theories, and models are what lead us to do what it is that we do; to do so to an expected standard or competency; done on the basis of evidence to support that which we do; and all this done for the benefit of the clients that we serve.

In the discussion the students of our profession and I had, I suggested that we spend some time on the basics and origins of the two models of dental hygiene practice. First things first, we articulated what is meant by "science", "knowledge" and "fact". The Human Needs Model and the Oral Health Related Quality of Life Model are a result of the authors' fact-finding mission translated into a knowledge-base from which their proposed scientific theory can be tested and modeled.

For the purpose of science, a fact is something known with certainty (Marriner-Tomey 1994); however, that certainty is based on the extent and interpretation of current information supporting the fact. The sun rises and sets within a 24-hour period—that is a fact. The world is round, fact (before, it used to be flat, thus illustrating the point of certainty being based on the ability to measure and interpret the information). Poorly controlled diabetes is a risk factor of periodontal disease, another fact. From facts, knowledge is built.

Facts are the bricks or the foundation and knowledge, the walls constructed that support the theory or concept. The more facts that support the "wall", the more valid, the closer to the truth, the theory can be considered to be. In our profession, you are hearing more and more about a relationship between periodontal disease and cardiovascular disease. Truth or fiction? How valid, how close to the truth is this. Presently, it remains fiction—the current state of knowledge regarding this is not empirical. The facts have yet to be put together, hence the wall does not exist (yet!).

Knowledge is based on factual information. It is "what is believed to be"; for example: pit and fissure sealants placed on teeth at risk to dental decay can effectively prevent caries from initiating from the sealed occlusal tooth surface. That is what is commonly believed and is so because of factual information—many, many studies have observed and concluded the same: pit and fissure sealant are an effective dental caries preventive measure. It is well researched. It is evidence-based.

Evidence-based, now there is a term that could be classified as a "buzz" word. This should not discredit the concept of evidence-based practice, that is, doing what you do based on factual information, knowledge and understanding the strength of that knowledge, how close to the truth, how valid it is to your practice. That knowledge was derived from the science, the unified body of knowledge concerned with a specific matter, plus all the skills and methodologies necessary to provide that knowledge. Facts are the bricks; knowledge the walls or floors; and science, the building (the body of knowledge).

FROM BRICKS TO BUILDINGS...DENTAL HYGIENE SCIENCE
continued on page 206

NEW!

Colgate* ACTIBRUSH™

An exceptional clean your patients can afford.

The oscillating head action is clinically proven to give a superior clean to an ordinary toothbrush. And because Colgate Actibrush is battery powered, there are no plugs, no cords and no recharging. It Is truly portable.

- Long slim neck for effective access to posterior regions.
- Small round head with soft bristles for individual tooth cleaning.
- 4,000 oscillations per minute for highly effective cleaning.
- Long battery life provides approximately 250 uses.
- Replacement heads available.
- Solid but lightweight handle and comfortable to hold.

To order
or for more information
call Colgate at 1-800-225-3756

*TM Reg'd Colgate-Palmolive Canada Inc.

MANAGER, COMMUNICATIONS SERVICES:
Angela J. Whelan, B.A.

EXECUTIVE DIRECTOR:
Carol Matheson Worobey, Dip.D.H.

SCIENTIFIC EDITOR:
Marilyn Goulding, RDH, B.Sc., MOS

ADVISORY GROUP:
Joanne Clovis, Dip.D.H., B.E.D., M.Sc.
Bonnie J. Craig, Dip.D.H., M.Ed., RDH
Bob Dunford, B.Sc., M.Sc.
Patricia Johnson, Dip.D.H., B.Sc.(DH), M.Sc., Ph.D.
Professor J.F.L. Pimlott, Dip.D.H., B.Sc.D., M.Sc.
Salme E. Lavigne, RDH, B.A., M.S.

EDITORIAL BOARD LIAISON:
Laura MacDonald, Dip.D.H., B.Sc.D., M.Ed.

EDITORIAL ADVISOR:
Kristina Edwards, M.A.

DESIGN: Catherine Pirie, B.I.D.

Published six times a year: Jan./Feb., Mar./Apr., May/June (Scientific Issue), July/Aug., Sept./Oct., Nov./Dec. (Scientific Issue), by
The Canadian Dental Hygienists Association,
96 Centrepointe Drive,
Nepean, ON K2G 6B1
Tel (613) 224-5515

Canada Post Publications Mail Registration No. 09877

CANADIAN POSTMASTER:
Notice of change of address and undeliverables should be sent to:
Canadian Dental Hygienists Association
96 Centrepointe Drive,
Ottawa, ON K2G 6B1

Subscriptions $75.00 (GST Included) in Canada, $125.00 Cdn for US and $130.00 Cdn elsewhere. Fifty cents per issue is allocated from membership fees for journal production. All statements are those of the authors and do not necessarily represent the CDHA, its Board, or its staff.

ADVERTISING AND SUBSCRIPTIONS:
Keith Health Care Inc.
1599 Hurontario Street, Suite 104
Mississauga, ON L5G 4S1
(905) 278-6700/1-800-661-5004

CDHA 2000
6176 CN ISSN 0 834-1494
GST Registration No. R106845233

CDHA CENTRAL OFFICE STAFF:

Executive Director:
Carol Matheson Worobey

Manager, Communications Services:
Angela J. Whelan

Manager, Finance and Administration:
Monique Belleau Rock

Manager, Member Services:
Sandra VanWart

Member Services Assistant:
Louise Lalonde

Executive Administrative Assistant:
Chris Brisson

Receptionist/Information Clerk:
Françine Fortin

All CDHA members are invited to call the CDHA's Member Line toll-free, with their questions/inquiries:
1-800-267-5235, Fax (613) 224-7283
Internet: http://www.cdha.ca
E-mail: info@cdha.ca
We look forward to serving you.

The Canadian Dental Hygienists Association's Journal, *Probe*, is the official publication of the CDHA. The CDHA invites submissions of original research, discussion papers, and statements of opinions pertinent to the dental hygiene profession. All manuscripts are refereed anonymously. Contributions to Probe do not necessarily represent the views of the CDHA, nor can the CDHA guarantee the authenticity of the reported research. Copyright 2000. All materials subject to this copyright may be photocopied for the non-commercial purpose of scientific or educational advancement.

TABLE OF CONTENTS

EDITORIAL:
FROM BRICKS TO BUILDINGS... DENTAL HYGIENE SCIENCE 203
By Laura MacDonald, Dip. D.H., B.Sc.D. (Dental Hygiene), M.Ed.

PROBE SCIENTIFIC JOURNAL GUIDELINES FOR AUTHORS 207

CONTINUING EDUCATION AND CHANGES IN PRACTICE: A SURVEY OF DENTAL HYGIENE STUDY CLUB PARTICIPANTS 211
By Nancy T. Keselyak, RDH, M.A. and Bonnie G. Branson, RDH, Ph.D.

APPLICATION INFORMATION FOR SCHOLARSHIP, GRANT AND AWARDS 215

NOT ALL TRAYS ARE CREATED EQUAL: AN ANALYSIS OF FLUORIDE TRAY FIT 217
By Salme Lavigne, Dip.D.H., B.A., M.S. (DH)

THE PRESERVATION OF THE NATURAL DENTITION: HOW SHOULD WE ADVISE OUR CLIENTS? 225
By Joanna Asadoorian, RDH, B.Sc.D. (Dental Hygiene)

ANNUAL INDEX 229

COVER: The cover includes images from www.eyewire.com

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

ADVERTISERS' INDEX

BUTLER ..... IFC
COLGATE-PALMOLIVE 204
D-SHARP 214
DMD HOUSE 206
DYNAMIC SEMINARS 206
HU FRIEDY ..... OBC
ORAL-B ..... TOC, 216
PERIO REPORTS 228
SULCABRUSH ..... IBC
WATERPIK 210

Oral-B® The Brand More Dental Hygienists Use Themselves.

(continued from page 203)

One of the attributes defining a group as a profession is that the group possesses a distinct body of knowledge, a science. It has been suggested that dental hygiene does not fulfill this requirement and hence cannot be considered a profession. That is a challenge, one to which I surely rise. Dental hygiene is based on the science (the body of knowledge) of oral disease prevention and oral health promotion. What other health profession can profess to being distinctly dedicated to that science? For instance, it was the dental hygiene professional community that raised critical awareness to the lack of evidence to support the practice of full mouth rubber cup prophylaxis. Given the choice, an informed one, clients would indeed choose to opt out of "polishing their teeth" despite the myth that clients expect that it will be done, regardless of need, and would not accept/expect otherwise.

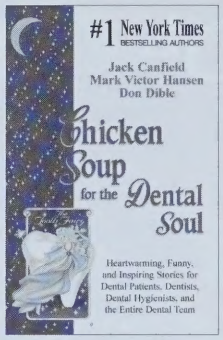
This ownership of a distinct body of knowledge is a funny one. Likely, the only true owner would be the actual scientist, the person behind the scene who actually discovers the facts. That person could be a learned scientist, but that person could actually be you, the clinician who considered the evidence of their practice and decided to formally and systematically document that evidence, analyze it and arrive at a conclusion. Darby and Walsh, Williams and colleagues, they did this. Granted, they are learned persons in the field of dental hygiene science, but they started from observations, formulating proposition statements of their observations, hypothesizing and creating their respective models based on their theory.

Probe Scientific Journal provides the reader the opportunity to keep abreast of dental hygiene science. In doing so, I invite you to constantly consider your model of dental hygiene practice and how scientifically grounded information helps to support that model or theory. Whether Darby and Walsh or Williams and colleagues have epitomized your practice or whether they haven't and it has yet to be articulated, when you are reading the literature, do so with some thoughts in mind:

- how does this fit with my practice model (articulated or not, it is there)?;
- does this advance my practice and quality care for the clients that I serve?;
- and do I have a role to play in the building of dental hygiene science, the facts, the knowledge, the science?

Great Holiday Gift Idea!

Chicken Soup for the Dental Soul



A little over two years ago, more than 170 dental associations in the US and Canada joined in announcing a story contest conducted by *Chicken Soup for the Dental Soul* that featured a grand prize of $2,000. 1,200+ stories were submitted and a panel of 65 dentists assisted with the selection of 61 stories – some funny, some sad, ALL TRUE – chosen for publication. *Chicken Soup for the Dental Soul* is now one of more than 30 titles in the 60+ million copy *New York Times* bestselling Chicken Soup for the Soul® series.

Dr. Joe Blaes, Editor of *Dental Economics* magazine, recently said, "*Chicken Soup for the Dental Soul* portrays dentistry as the warm, caring profession we insiders have always known it to be."

Chicken Soup for the Dental Soul is the ideal gift for patients, staff, family and friends. Not sold in stores. To order, phone toll-free 1-800-247-6553 or mail check for $US12.95 plus $US4 shipping to DMD House, 1250 Oakmead Parkway, Suite 210, Sunnyvale, CA 94085 USA. Very profitable fundraiser – cases of 52 copies are just $US478.40 – case price includes shipping.

Dynamic Seminars
"Success Through Professional Development"

Jenny Finan R.D.H.

53 MacDougall Drive, Dundas, Ontario L9H 6X8 Canada
Fax: (905) 627-8569 Email: info@dynamicseminars.net

Fall 2000 Professional Development Series

The Dental Hygiene Process of Care, *Lisa Mapplebeck, R.D.H.*
Saturday, September 30, 2000 9am – 1pm, Mohawk College, Fennel Campus, Hamilton

"The Cutting Edge" Dental Products for Clinical Excellence, *Dr. Rella Christensen*
Saturday, October 28, 2000 9am to 3pm, Burlington Holiday Inn, Burlington

Communicate & Educate Effectively Using the Intra-Oral Camera
Nancy Majeski Davis, R.D.H. (Limited Attendance, Regisiter Early!)
Thursday, November 9, 2000 7pm to 10pm, Patterson Dental, Mississauga

A Hartzell Scaler "Hands-On" Workshop for Dental Hygienists
Nancy Majeski Davis, R.D.H. (Limited Attendance, Regisiter Early!)
Friday November 10, 2000 9 am to 1 pm or 2pm to 6 pm, Mongomery's Inn, Etobiocoke
Friday, December 1, 2000 9 am to 1 pm or 2pm to 6pm, Mongomery's Inn, Etobiocoke

Dentin Sensitivity: Causes and Cures, *Dr. Hardy Limeback*
Saturday, November 25, 2000 9am to 1pm, Mohawk College, Fennel Campus, Hamilton

Audio Tapes Available:
"Fluoride: Oral & Systemic Effects", Dr. Hardy Limeback
"Effective Antimicrobial Agents for Periodontal Health", Dr. S. Andreana

To REGISTER or ORDER AUDIO TAPES:
Call (905) 627-7212
or visit our website at
www.dynamicseminars.net

PROBE SCIENTIFIC JOURNAL GUIDELINES FOR AUTHORS

MISSION STATEMENT

The mission of the *Probe Scientific Journal* is to provide a forum for the dissemination of dental hygiene research to enrich the body of knowledge within the profession. Further, the intent is to foster the growth of interest and broaden the scope of research awareness within the dental hygiene community.

INSTRUCTIONS TO AUTHORS

POLICY STATEMENT

The *Probe Scientific Journal* invites manuscripts relevant to dental hygiene research including theory development, education and practice. Preference is given to manuscripts which address current issues, make a significant contribution to the body of knowledge of dental hygiene and advance the scientific basis of practice.

A manuscript is accepted for consideration with the understanding that the manuscript has not been submitted, is not currently being reviewed, and has not been published previously in any written or electronic form. This does not include abstracts prepared and presented in conjunction with a scientific meeting and subsequently published in the proceedings.

Manuscripts reporting empirical studies should provide comprehensive descriptions of the research design and methods. The results and conclusions should be clear and be supported by valid and reliable data. Manuscripts developing theory or discussing epidemiological or methodological issues should be appropriately illustrated and documented.

INITIAL MANUSCRIPT SUBMISSION

Each initial submission must include four (4) hard copies of the manuscript, double-spaced, single-sided, with title page, key words, abstract, text, acknowledgments, references, tables, figures and illustrations (with legends), each beginning on a new page.

Submissions must include electronic files saved as WordPerfect (individual file titles ending with: .wpd) or Microsoft Word (individual file titles ending with: .doc). Although PC files and PC diskettes or zip disks are preferable, the CDHA will also accept Mac versions. Please indicate the software version and platform on all disks.

Under certain circumstances, upon confirmation with the CDHA, PageMaker or QuarkXPress files can be accepted.

Electronic files of manuscripts should be presented as free of formatting as possible (i.e. free of tabs, indents, and codes). The exceptions to this are:

- italicized items such as the species of an organism
- accepted Latin terminology and abbreviations
- indented reference sections.

Illustrations, charts, diagrams and photographs should be inserted at appropriate locations within the hard copy of the manuscripts supplied. Clean copies of all illustrations, charts and diagrams should be provided on separate 8½" x 11" sheets. Illustrations, charts and diagrams created in electronic formats must be provided in the following manner:

- a copy of the original file in the original program on a disk
- where possible, also saved as a *.TIF or *.EPS version (and named accordingly) on a disk
- as a hard copy

Photographs should be provided as unmounted glossy prints (5" x 7" or 8" x 10" preferred), slides or electronic files (minimum 600 dpi), or preferably both. All illustrations, charts, diagrams and photos should be enclosed in a separate envelope, and reinforced with cardboard, within the mailing pouch. Each item must be labelled clearly on the back with the authors' abbreviated captions and numbers according to the citations within the text, and the corresponding manuscript page numbers. Note: information should be printed on a label affixed it to the back of the image—do not write directly on the backs of photographs or images.

Each manuscript must be accompanied by a cover letter testifying that the research is original, not under consideration elsewhere and conducted according to ethical standards of the *Tri-Council Policy Statement for Ethical Conduct for Research Involving Humans 1998*. The letter must be signed by the first author and include this correspondent's mailing address, telephone, fax and/or e-mail address.

The correspondent should also include a self-addressed, stamped post card with the following typed text: "The manuscript entitled ____TITLE____ has been received by the editor on ____DATE____." Upon receipt of the manuscript this card will be dated and returned to the author.

MANUSCRIPT CONTENT AND COMPONENTS

Authors are reminded to use a direct and straightforward writing style. The comprehension of the non-scientifically trained reader is enhanced when the writing is clear, and there is a logical progression of ideas within each sentence, each paragraph and ultimately throughout the manuscript. State your purpose and thesis up-front, and follow it with background, dates, discussion and conclusions. Good writing is clear, concise and free of acronyms and jargon.

TITLE PAGE

The title must be concise but informative. It should be followed by the first name, middle initial and last name of each author, and should note their respective degrees and any institutional affiliation. All authors noted should each have participated sufficiently in the work to be accountable for its contents. Any co-authors should initial manuscripts beside their name to indicate that they have reviewed and approve the contents. Up to four authors may be listed on papers. If more than four authors are involved, the remaining authors will be listed as *et al.*

ABSTRACT

The abstract should be no longer than one typewritten page (approximately 250 words) and should not contain either references or section headings. A typical format is outlined below.

The components for empirical studies should be, in order:

1. Background: describing the problem being addressed and why
2. Methods: describing how the study was performed
3. Results: stating the primary statistical report
4. Conclusion: what the authors have derived from these results

The components for reviews should be, in order:

1. Objective: including the subject or procedure reviewed
2. Method: a description of the review methodology (e.g. metanalysis)
3. Summary: a synopsis of the conclusion and/or results

or

1. Clinical Condition: a description of the clinical quandary
2. the treatment choices and comparisons
3. Results: the expected clinical outcomes given the options reviewed

A maximum of six (6) key words or short phrases that will assist indexers in cross-referencing the article should be provided with the abstract. Terms from the Medical Subject Headings (MeSH) list of *Index Medicus* are preferred.

TEXT

Text should be in a 12-point serif font (e.g. Times) or sans serif font (e.g. Arial, Helvetica). Script typefaces should be avoided. Neither body text nor titles should ever be typed in CAPS. Paragraphs should be separated by one line return and should not be indented. The text must be divided into sections as shown below. Subheadings, as deemed appropriate by the authors for clarification and ease of readership, are acceptable.

1. Introduction

This section states a concise background and the rationale for and purpose of the article. All work reported in this section must have been completed and published and cannot include data and/or findings from the paper being presented.

2. Materials and Methods

Readers should be able to reproduce the study from the report in this section. List the methods and materials (stating manufacturer's name and location; city/state/province/country) used in the study. Research populations must be calculated and identified. Study design must be clear and appropriate controls seen to be in place. Human review and appropriate consent must be stated and in accordance with the *Tri-Council Policy Statement for Ethical Conduct for Research Involving Humans 1998*. Any animal studies must be in accordance with national law on the care and use of laboratory animals and should state the institution's review requirement.

3. Results

Results should be presented in a logical sequence as befits the methods used, and must reference tables, figures and illustrations. Details about randomization, eligibility and/or loss of subjects should be included. All tabular data should report either standard deviation values or standard errors of the means, probability values and the names of any statistical tests used.

4. Discussion

This area allows the authors to explain and interpret their work in light of the previously published work outlined in the Introduction. Authors may highlight the advances as well as discuss the limitations of their work. Implications for future work should be discussed. Subjectivity is acceptable in this section if it is directly linked to the content of the paper and has shown scientifically credible background to support the statement.

5. Conclusions

Conclusions must be drawn from the body of original work and not in light of work referred to within the discussion section. Statements made in this section must be without speculation and must be seen to derive directly from the results.

6. Acknowledgments

Here recognition is given to individuals who have provided assistance or support to the work. The author must obtain

written permission from any and all persons identified in this section for citing their names, as to do so may imply endorsement of the data and/or conclusions. All funding sources must be identified in this section.

7. References

List all sources cited in the paper. References should be listed in chronological order of appearance. References must appear as superscript numbers at the end of the sentence in which they appear. If a sentence contains two references a comma is inserted between them; if multiple sequential references, an n-dash is inserted between the first and last reference number (e.g. [1, 2] or [3–6]).

The reference style chosen for the *Probe Scientific Journal* is based on the *Index Medicus* and is as follows:

From a Journal
Orban, B., Manella, V.B.: A macroscopic and microscopic study of instruments designed for root planing. *J. Periodontol* 27: pp. 120–135, 1956

Volume with Supplement
Orban, B., Manella, V.B.: A macroscopic and microscopic study of instruments designed for root planing. *J. Periodontol* 27 (Suppl. 5): pp. 120–135, 1956

From a Book
Weinstein, L., Swartz, M.N.: Pathological properties of invading organisms. In: Soderman, W.A. Jr., Soderman, W.A. eds. Pathological physiology: mechanisms of disease. Philadelphia: WB Saunders, pp. 457–472, 1974

Organization As Author
Canadian Cancer Institute: Guidelines for Oral Cancer Screening. *J Can Med Assoc.*: pp. 265–268, 1998

No Author
What is Your Role in the Profession? (editorial) *J Dent Topics*: pp. 16-17, 1999

Personal Communication
Gjermo, P.: University of Oslo *(from recent work on chlorexidine toxicology)*

Newspaper Article
Rensberger, B., Specter, B.: CFCs may be destroyed by natural process. *The Globe and Mail*, Sect. B, p. 24, Aug. 7, 1999

Audiovisual
Product Evaluation, A3, *Proctor and Gamble Educational Slide Series*, 1997

Computer File
Renal System (computer program) MAC version. Edwardsville, K.: *MedSim*

Internet
Periodontal Process of Inflammation. Derweb Education Page; *University of Sheffield*; http://www.derweb.ac.uk/ (1999)

PUBLICATION PROCESS

The *Probe Scientific Journal* is a peer-reviewed journal. Each manuscript will be reviewed by the editor and two members of the advisory group as well as the statistical consultant. The author will then receive all comments (written directly on the hard copies) and a cover letter summarizing any resubmission requirements. All attempts will be made to return the first round of comments within six (6) weeks.

Authors should make the appropriate changes by referring to the editor's letter and reviewing each of the returned copies to compile all changes into a final submission. If the author feels any of the reviewers'/editor's suggestions/required changes are inappropriate, they should continue to revise the manuscript and return it with the **unchanged** portion bracketed in indelible ink along with a cover letter offering a rationale as to why these areas remain unrevised. As the editor utilizes fax communication with the review committee, authors are requested not to highlight the text as highlighting does not fax well and can reduce readability.

FINAL ELECTRONIC FILE SUBMISSION

When a manuscript has been accepted for submission, electronic files that include all recommended revisions from *Probe Scientific Journal* readers should be forwarded to CDHA, along with four (4) accompanying hard copy manuscripts of all the files. Electronic files should be saved in WordPerfect, Microsoft Word, Quark XPress or Pagemaker format on clearly labelled PC or Mac diskettes or zip disks.

Authors are reminded to adhere to the guidelines, outlined in the earlier section of this article entitled "Initial Manuscript Submission", when supplying revised files or any other final materials for publication.

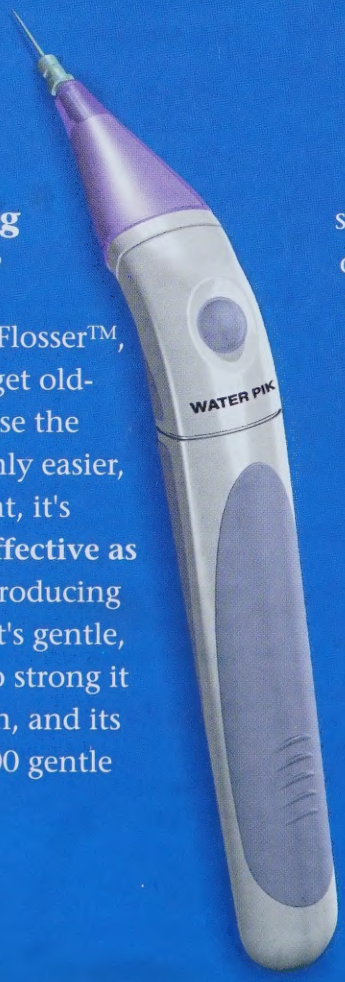
FINAL EDITORIAL APPROVAL AND COPYRIGHT RELEASE

The revised copies will be sent out to the original reviewers for verification of content revision. The reviewers will have ten (10) days to reply to the editor who will then inform the author that the paper has been accepted and that the copyright form must be signed and returned. Upon submission each author provisionally gives up copyright and is required to sign and return the copyright release form which is included in the letter of acceptance from the editor. All manuscripts accepted become the property of the *Probe Scientific Journal* and cannot be submitted elsewhere unless returned to the author unpublished within 12 to 16 months.

The paper will then be forwarded to the Managing Editor who will put it into the printing process. Since the *Probe Scientific Journal* is produced only twice a year, the paper will be sent in sequence.

DEFIANCE

COMPLIANCE



Having trouble getting your patients to floss?

With the the new Water Pik Flosser™, it's automatic. They can forget old-fashioned dental floss. Because the Water Pik Flosser ™ is not only easier, quicker, and more convenient, it's **clinically proven to be as effective as manual flossing** - without producing soft tissue damage. Though it's gentle, its single nylon filament is so strong it won't break off between teeth, and its up-and-down action at 10,000 gentle strokes a minute ensures thorough, one-handed cleaning. Plus, the Water Pik Flosser™ is portable, so patients can practice sound oral hygiene even on the road. Perhaps best of all, it's from Waterpik Technologies, the company you trust for the best in oral health innovation.

Water Pik Flosser™
FLOSSING WITHOUT FLOSS

www.waterpik.com

CONTINUING EDUCATION AND CHANGES IN PRACTICE: A SURVEY OF DENTAL HYGIENE STUDY CLUB PARTICIPANTS

NANCY T. KESELYAK, RDH, M.A. and
BONNIE G. BRANSON, RDH, Ph.D.

University of Missouri—Kansas City
School of Dentistry, Division of Dental Hygiene

KEY WORDS: continuing education, dental hygienist, clinical practice

ABSTRACT

The purpose of this study was to determine 1) dental hygienists' perceptions of changes in their practice after participation in a study club, 2) perceived conditions necessary to support changes in practice and 3) reasons why dental hygienists chose to participate in a study club for continuing education.

Thirty-five dental hygienists participated in three separate study clubs in British Columbia from September 1998 to June 1999. While content varied among the groups, each followed an instructional format and awarded continuing education credits. At the end of each session, participants identified specific changes that they planned to make as a result of the session. These responses were used to develop a questionnaire that was mailed to all 35 participants. The responses were analyzed by identifying themes and tabulating the number of respondents reporting a specific item.

Twenty-six questionnaires were returned for a response rate of 74%. All respondents reported making changes to practice as a result of participation in the study club. Respondents reported varying degrees of support and receptiveness from their work environments. They perceive accurate information as evidenced by research and support in the workplace as important in making changes possible. The most commonly reported reasons for choosing continuing education in a study club format were 1) control over topics, 2) the small group/personal atmosphere and 3) the social interaction with peers.

INTRODUCTION

Standards of care are continually subject to changes as a result of new research. Keeping up with those changes and integrating them into clinical practice is a tremendous challenge for practitioners. Even with the best intentions, "there are often major discrepancies between the 'accepted wisdom' and the findings from research, and a substantial gap between the care delivered by health professionals and that indicated by the evidence".[1] Continuing professional education has been the primary methodology for minimizing these discrepancies. There is evidence that continuing professional education can increase a practitioner's knowledge[2]. However, changes in practitioner performance or health care outcomes as a result of continuing professional education have been difficult to measure.

In British Columbia, continuing education for dental hygienists has been mandatory since the middle 1970's and is considered one facet of the continuing competency program to promote high practice standards amongst registrants. In 1990, there were very few active dental hygiene study clubs in the province. The College of Dental Hygienists of British Columbia (CDHBC) reports that there are currently 17 study clubs in BC with a total number of 242 participants registered for the 1999-2000 year. The Quality Assurance Committee reports that the "study club format of continuing education is an excellent way to maintain competence and develop professionally."[3] Study clubs have the privilege of planning and conducting sessions of interest to members and the professional responsibility of adhering to the continuing competency guidelines that are found in the CDHBC Registrant's Handbook.

The purpose of this study was to determine 1) dental hygienists' perceptions of changes in their practice after participation in a study club, 2) perceived conditions necessary to support changes in practice and 3) reasons why dental hygienists chose to participate in a study club for continuing education.

METHODOLOGY

Thirty-five dental hygienists participated in three separate study clubs in British Columbia from September 1998 to June 1999.

These study clubs were located in the Lower Mainland area, where continuing education opportunities are numerous and easily accessible. While content varied among the groups, each followed an instructional format and awarded continuing education credits. All groups studied topics applicable to current dental hygiene practice standards and included both clinical and didactic methodologies. At the end of each session, participants identified specific changes that they planned to make as a result of the session. These responses were used to develop a questionnaire. Questionnaires were mailed to all 35 study club participants and reminder calls were made four weeks after the initial mailing.

The questionnaire contained a demographic data section and open-ended items related to the participant's perceptions of changes in their practice after involvement in a study club and the perceived conditions necessary to support changes in practice. Participants were also asked to identify reasons why they chose to attend a study club for continuing education. A separate section of the questionnaire listed the series of intended changes identified by each group at the conclusion of each session. Each person was asked to select from this list any changes that had been made in practice as a result of the study club experience.

DEMOGRAPHICS OF SURVEY POPULATION:

35 surveys mailed

26 surveys returned

response rate 74%

Average age 38

Range of ages 28-52

Degree of education:

85% ..... Diploma in Dental Hygiene

15% ..... Bachelor of Science Degree

% Private practice 96%

% Full-time employment 46%

% Part-time employment 54%

Years of taking CE by %:

23% ..... (1-5 years)

35% ..... (5-10 years)

42% ..... (more than 10 years)

figure 1: Demographics of survey population

The questionnaire was submitted to the University of Missouri-Kansas City Social Sciences Institutional Review Board. Upon examination of the instrument and the protocol, the review board sent written approval to proceed with the study. To analyze the data, a comprehensive list of all the responses to the open-ended questions was generated. Similar responses were grouped together. Actual changes in practice from the list of intended changes were noted.

RESULTS

Twenty-six questionnaires were returned for a response rate of 74% (Figure 1). While respondents reported varying degrees of change to their practice, all respondents reported making changes as a result of participation in the study clubs.

Respondents reported varying degrees of support and receptiveness from their work environments. Sixty-two percent reported that their work environments were supportive and receptive to their changes, 23% reported change as possible to some degree, 8% reported very limited ability to make changes in their environment and 8% did not respond to the question (Figure 2). Respondents reported various requirements to facilitate desired changes in practice. The most commonly reported requirements were accurate information and the support of staff/dentist (Figure 3). It was not determined whether respondents listing low support in their work environments made fewer changes than those with greater support in their work environments. Respondents reported accurate information as evidenced by research and the support of their employer and staff as the two most essential factors in implementing change.

DO YOU BELIEVE YOUR WORK ENVIRONMENT ALLOWS YOU TO IMPLEMENT CHANGES TO YOUR PRACTICE OF DENTAL HYGIENE?

62% reported their work environments supportive & receptive to change without limitations

23% reported their work environments supportive & receptive to change with some limitations

8% reported very limited support in their work environments to make change

7% did not respond

figure 2: Perceptions of ability to make changes in the practice environment

WHAT DO YOU BELIEVE YOU NEED TO FACILITATE ANY DESIRED CHANGES IN YOUR PRACTICE? *	
Accurate information to build case for the change and it's impact on the practice/patients	42%
Support of staff and dentist	35%
More time for patient education	19%
More communication with patients &/or staff	12%
Money (change not increase expenses of office)	12%
Assessment & charting documentation	4%
Less pressure to produce	4%
A plan to implement and evaluate change	4%
Respect, autonomy, trust – relationship (dentist/hygienist)	4%
Motivation, assertiveness, conviction to change	4%
Confirmation, feedback, input from others	4%
Sharing a common vision (dentist & staff)	4%

* Responses will not total 100% due to multiple responses from participants

figure 3: Perceived needs to facilitate changes in practice

The most commonly reported reasons for choosing continuing education in a study club format were 1) control over topics, 2) the small group/personal atmosphere and 3) the social interaction with peers (Figure 4). Other reasons for choosing study club participation included the convenient location and hours, the regular frequency of meetings, and cost effectiveness. Some respondents suggested that they felt better able to apply their learning after participation in a study club.

DISCUSSION

A limited review of the literature on continuing education in nursing shows that nurses perceive that continuing professional education improves care, but there also continues to be very little empirical support for this viewpoint.[4] Research on the impact of formal continuing medical education (CME) conclude that "where performance change is the immediate goal of a CME activity, the exclusively didactic CME modality has little or no role to play."[5] Those same researchers also suggest that didactic programs should receive less credit than other methods identified as more effective. These methods included programs with a high degree of active learning opportunities, learning delivered in a longitudinal or sequential manner with multiple exposures, and the provision of enabling methods to facilitate implementation in the practice setting. Courses most likely to impact practice are those that offer updates on common clinical topics and are hands-on in nature.[6] Study club organizers have traditionally relied on these methods and can utilize this information to support their continued efforts in designing activities geared toward facilitating changes in practitioner performance.

Care must be taken when considering research finding based on self-reported behaviors. As Ferral showed in 1988, there were no significant differences in self-reported behavior change between program attendees and non-attendees.[7] This present study uses self-reports and indicates only that dental hygienists perceive that their behavior changed as a result of the continuing education activity.

WHY DID YOU CHOOSE A STUDY CLUB FORMAT FOR CONTINUING EDUCATION OVER OTHER INSTRUCTIONAL METHODS?*	
(Summary of responses to the open-ended question)	
Control over topics	65%
Small group/personal atmosphere	65%
Social interaction with peers	62%
Convenience	31%
Regular frequency	19%
Cost effective	12%
Better able to apply learning	4%
Interesting mentors	4%
Change	4%
Feel more accountable	4%

* Responses will not total 100% due to multiple responses from participants.

figure 4: Reasons for choosing a study club format for continuing education over other instructional methods

As seen in the present study, there are perceived influences on practitioner performance other than the continuing education program itself. Cervero in 1986 suggested that when continuing education is conducted at the workplace, the social system provides the context in which everything else happens. A strong argument is made for involving members of these social systems in the program planning process to increase the likelihood that the learning will be applied in the practice setting.[8] Participants in the present study confirmed that the employer and the staff greatly impact one's ability to make changes in performance. Workplace environments that lack supportive social systems may contribute to complacency among practitioners. Peer interaction and support is ranked as very important to respondents and may facilitate the development of confidence to initiate change in the workplace.

Individual characteristics of the practitioner may also have great influences on the ability to make changes in practice behaviors and may influence the type of continuing education activities pursued. Individuals that are self-directed, with a high degree of motivation may manage their destinies differently than others without these characteristics[9]. One respondent indicated that she selects her place of employment based on the degree of autonomy and impact of decision making available to her in the position. Further research is needed to determine to what degree personal characteristics influence choices in continuing education and changes in practice behaviors.

" Bringing your Dental Instruments Back to Life "

Well-maintained instruments increase practice productivity, offer better patient comfort and are essential for superior dental care. At D-Sharp, we offer a complete Dental Instrument re-sharpening, re-tipping and Handpiece Repair service.

Please call to arrange for a pick-up! Ask us about our new "State-of-the-Art" sharpening stones, educational videos and training courses!

Better Quality Care
Higher Productivity
Better Quality Service
Lower operating Costs

Please call our Toll Free Number:
1-877-8DSHARP (1-877-837-4277)
Fax: (905) 331-5803
email: inquiries@d-sharp.com
www.d-sharp.com

Kingston • Toronto • Calgary • Vancouver

CONCLUSIONS

Dental hygienists report changes to practice after participation in continuing education presented in a study club format. They perceive accurate information as evidenced by research and support in the workplace as important in making changes possible. The majority of dental hygienists chose to participate in a study club because they had control over the topics, they preferred the small group/personal atmosphere, and enjoyed the social interactions with peers.

REFERENCES

1. Mason, J.M., Wood, J and Freemantle, N.: Designing evaluations of interventions to change professional practice. *J Health Serv Res Policy* 4: pp. 106-111, 1999
2. Davis, D., Lindsay, E and Mazmanian, P.: The effectiveness of CME interventions. In D.A. Davis & R.D. Fox (eds.), *The physician as learner: Linking research to practice*. Chicago: The American Medical Association, pp. 241-280, 1994
3. Johnstone, D.: Quality Assurance Committee Report, *Access*, College of Dental Hygienists of British Columbia, p.6, December 1999
4. Furze, G and Pearcey, P.: Continuing Education in Nursing: a review of the literature. *Journal of Advanced Nursing*, 29: pp. 355-363, 1999
5. Davis, D., Lindsay, E and Mazmanian, P.: The effectiveness of CME interventions. In D.A. Davis & R.D. Fox (eds.), *The physician as learner: Linking research to practice*. Chicago: The American Medical Association, pp. 241-280, 1994
6. Bullock, A, Belfield, C, Butterfield, S, Ribbins, P and Frame, E.: Continuing education courses in dentistry: assessing impact on practice. *Medical Education*, 33: pp. 484-488, 1999
7. Ferrell, M.: The relationship of continuing education offerings to self-reported changes in behavior. *Journal of Continuing Education in Nursing* 19: pp.21-24, 1988
8. Cervero, R., Rottet, S. and Dimmock, K.: Analyzing the effectiveness of continuing professional education at the workplace. *Adult Education Quarterly*, 36: pp. 78-85, 1986
9. Knowles M.: *The adult Learner: A Neglected Species* 4th edition. Gulf Publishing Company, Houston, Texas, 1990

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION

L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

Oral-B®

CALL FOR APPLICANTS:
CDHA/ORAL-B DENTAL HYGIENE STUDENT SCHOLARSHIP

WHAT IS THE STUDENT SCHOLARSHIP PROGRAM?
The Student Scholarship is awarded to undergraduate dental hygiene students for their contributions to the advancement of dental hygiene.

THE PROGRAM CONSISTS OF:
- One $1,000 scholarship to be used toward dental hygiene education expenses.
- Air travel expenses to and from the CDHA Annual Professional Conference and three nights accommodation at the conference hotel (Conference registration will be paid by the CDHA).

WHO IS ELIGIBLE?
- Undergraduate dental hygiene students.
- Applicants must be CDHA student members.

HOW TO APPLY
- Applicants must submit, in writing, a description of their involvement with the Canadian Dental Hygienists Association.
- Applications must be accompanied by the endorsement of two CDHA members.

CRITERIA FOR JUDGING
- Demonstrated involvement in the Canadian Dental Hygienists Association, e.g.
- Submitted material for publication in either of the CDHA journals *Probe* or *Probe Scientific Journal*.
- Demonstrated keen interest in national dental hygiene issues.
- Demonstrated qualities of leadership.
- Participation in National Dental Hygiene Awareness Campaign.
- Participation in national/international conferences such as table clinic presentations, poster sessions, presentations, etc.
- Applicants must describe how they have promoted oral health and the profession of dental hygiene in the community.

Note: The successful candidate agrees to submit for publication an article outlining his/her accomplishments and involvement in CDHA.

APPLICATION DEADLINE
Applications are to be submitted to CDHA's Central Office by **Wednesday, March 15, 2001**.

CALL FOR APPLICANTS:
CDHA/ORAL-B GRADUATE STUDENT RESEARCH AWARDS (2)

OBJECTIVE:
To promote the research training of Canadian dental hygienists in research-oriented Masters (1) and Doctoral (1) programs.

GENERAL DESCRIPTION:
An award of $5,000 will be given annually to highly qualified candidates enrolled as a graduate student in a Masters and a Doctoral program.

ELIGIBILITY:
Applicants for these awards must be Canadian dental hygienists who are Active, Associate, Student or Life members of the CDHA, in good standing, who may be studying full- or part-time. Applicants must present evidence of having been accepted for the related Masters or Doctoral program by a recognized academic institution.

APPLICATIONS:
The deadline is **Saturday, April 1, 2001**. Applications must be submitted on forms available from CDHA's Central Office.

DURATION:
These awards are made for one academic year for full-time students or the equivalent for part-time students. The awards may be considered for renewal for one additional academic year or its equivalent upon receipt of a satisfactory progress report. The progress report must detail work to date and include any pre-prints or reprints arising from the work. Any request for renewal of the awards must be accompanied by a letter from the research supervisor and one other professional referee.

CONDITION OF SUPPORT:
Upon completion of studies, recipients of these awarde agree to provide a bound copy of the thesis or project to CDHA's Central Office.

For further information and/or application forms, contact:

Canadian Dental Hygienists Association,
96 Centrepointe Drive, Ottawa, ON K2G 6B1

Telephone: (613) 224-5515
Facsimile: (613) 224-7283
E-mail: info@cdha.ca

CALL FOR APPLICANTS:
CDHA DENTAL HYGIENE RESEARCH GRANT

OBJECTIVE:
To support Canadian dental hygienists engaged in research that enhances the dental hygiene profession's ability to promote health and well-being.

GENERAL DESCRIPTION:
A grant of $5,000 will be awarded annually to a Canadian dental hygienist involved in qualitative or quantitative research as a principal investigator or co-investigator. Preference will be given to research projects relevant to the discipline of dental hygiene and the goals of the CDHA.

ELIGIBILITY:
Applicants for this grant must be academically qualified Canadian dental hygienists who are Active or Life members of the CDHA in good standing. Evidence of academic credentials at the Masters and/or PhD level is required.

APPLICATIONS:
The deadline is **Wednesday, March 31, 2001**. Applications must be submitted on forms available from CDHA's Central Office.

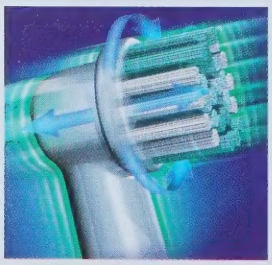
CONDITION OF AWARD:
Upon completion of the research project, recipients of this grant agree to provide a written report for the *Probe* or reprints of journal articles to CDHA's Central Office.

Expect less from your patients.

Better plaque removal at home means better results in your office

Cleans like no other brush in the world.

The Braun Oral-B 3D is the only power toothbrush that combines two distinct brushing motions: gentle in-and-out pulsations to loosen plaque from deep between the teeth and below the gumline, and side-to-side oscillations to sweep it away. The result? Significantly better plaque removal than a manual toothbrush.[1,2]

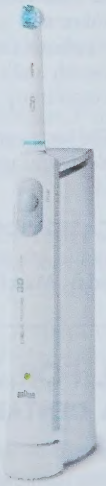


The better way to better results.

In a long-term practice-based study involving more than 16,000 patients, participating dentists reported that more than 80% of patients using a Braun Oral-B Plaque Remover* had noticeable improvement in oral health.[3]

The right recommendation.

No other toothbrush in the world cleans like the Braun Oral-B 3D, which is why there's no better brushing method—power or manual—to recommend to your patients. The Braun Oral-B 3D—pulsates deep to clean better.



BRAUN

For more information, or to order yours at a professional trial price, please contact your authorized dental dealer or call us at 1-800-268-5217. Visit our web sites at www.braun.com and www.oralb.com.

*Braun Oral-B Ultra.

References: 1. Cronin M, et al. *AmJDent* 1998;11:S17-S21. **2.** Van der Weijden G.A., et al. *AmJDent* 1998;11:S23-S28. **3.** Warren PR, et al. *JADA* 2000;131:389-394.

Oral-B®

CDHA ACHD Explorer
KEEPING DENTAL HYGIENISTS IN TOUCH FROM COAST TO COAST

NUMBER 2 PUBLISHED BY THE CANADIAN DENTAL HYGIENISTS ASSOCIATION NOVEMBER/DECEMBER 2000

A MESSAGE FROM THE NEW CDHA PRESIDENT

An Invitation *to* Professionalization

PRESIDENT'S MESSAGE

SALME LAVIGNE
RDH, BA, MS (DH)

I have always considered dental hygiene to be a profession and have always been proud to be a health care professional. I have heard dental hygienists referred to as allied health professionals, paraprofessionals and other creative names which imply our professional status. When Ontario dental hygienists were granted self-regulation, they became one of the numerous health professions under the umbrella of the Regulated Health Professions Act. So, you might ask – "what's my point"?

My point is that quite reluctantly, I have come to the realization that although we may consider ourselves a profession, we are not considered a profession in the eyes of the Federal Government, the North American Free Trade Agreement (NAFTA), other health professionals or the public. The Federal Government of Canada defines dental hygiene as a health occupation with "Skill Level B", which places us in the same category as those who require two to four years of apprenticeship training or who require more than two years of on the job training with no formal education.

Dental hygiene in Canada has come a long way over the last 50 years, acquiring a number of professional attributes such as autonomy through self-regulation; commitment through participation in professional associations; a strong sense of community evidenced by the development of National Practice Standards; a unique Code of Ethics; our own National Certification Examination; and participation in the educational Accreditation process. However, the last missing links appear to be the educational preparation for entry to practice at the degree level along with a unique body of dental hygiene knowledge which is beginning to emerge slowly.

In attribute literature cited in the recent two part Probe publications authored by Joanne Clovis, she states "the greater the education required, the more professional the occupation".[1,2]

Since the minimum of a baccalaureate degree as entry to practice and a unique body of knowledge appear to be critical factors in defining a discipline as a profession, it is the responsibility of the CDHA as the "collective voice of dental hygiene in Canada" and its only policy-making body, to respond to this challenge. But are we ready for the challenge?

I for one feel that if we don't rise to the occasion, dental hygiene as a discipline will be in jeopardy of extinction! I say that with true passion for several reasons. First of all, when I entered dental hygiene more years ago than I am willing to admit, dental hygiene, nursing, physical therapy, occupational therapy and speech pathology were all considered as parallel health professions, all with similar educational preparation at the university

Continued on page 11...

1 Clovis J.: *The Professional Status of Dental Hygiene in Canada, Part One: Progress and Challenges.* Probe Scientific Journal 33:pp 186-195, 1999.
2 Clovis J.: *The Professional Status of Dental Hygiene in Canada, Part Two:* Probe Scientific Journal 34:pp 99-104, 2000.

Inside

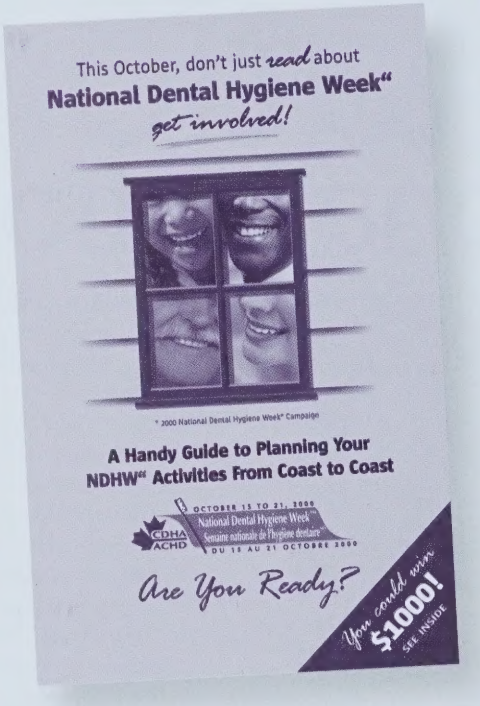
Working Together to Promote our Profession 2-3
CDHA/Colgate Community Health Award 4
Member Services Notes 5
CDHA Annual Report 6-9
Dental Hygiene Educators Canada (DHEC) 10
Probing the Net 10
Classifieds 12

Working Together to Promote our Profession

The National Campaign Planning Committee gears up for 2001

National Dental Hygiene Week™ (NDHW) has come and gone for another year. Members of the CDHA can be proud of their accomplishments for 2000 and they can look forward to exciting plans underway for 2001. Now, more than ever, the national and provincial dental hygiene organizations are working together to promote the profession.

This year, we reached millions of Canadians with ads in two of the country's premiere news magazines – *Maclean's* and *L'actualité* – and with a hot button on the *Maclean's* Web site, which linked back to the CDHA's site. Radio Public Service Announcements (PSAs) promoting NDHW™, professionally produced in both English and French, were aired on radio stations across Canada. Members displayed campaign posters in their clinics for all of their clients to see. Most importantly, thousands of dental hygienists from coast to coast showed pride in the profession, using their Campaign Planning Kit to provide valuable oral health information to members of their communities.



The year 2001 promises to be truly historic, marking the dental hygiene profession's 50th Anniversary of service to the Canadian public. That's why the National Campaign Planning Committee, with representatives from national and provincial dental hygiene organizations, has already started gearing up to plan the most elaborate NDHW™ ever and to properly celebrate a half-century of important work.

In mid-September 2000, members of the National Campaign Planning Committee travelled to Ottawa for a special weekend planning workshop, organized and hosted by the CDHA's public relations and advertising agency, Delta Media. The Committee discussed a number of goals and objectives for the campaign:

- to get all members – past, present and future – involved;
- to reach out and engage the Canadian public;
- to capture media attention for the dental hygiene profession; and
- as always, to have fun!

Then, through various brainstorming exercises, the group built a long list of activities for creative ways of celebrating NDHW™ 2001 and the 50th Anniversary. We would like to share *some* of their ideas for both of those big events with you, because we want to know what you think!

IDEAS FOR NDHW™ 2001

- participate in "wellness" trade shows
- visit long-term health care facilities
- take part in health fundraising activities
- partner with "health months"
- columns in local newspapers
- ads in consumer magazines
- banner ads on Web sites
- special edition posters
- radio contests involving sponsors
- temporary tattoos
- transit advertising
- professional name tags for members
- television commercials
- ads in trade journals
- tip sheets for consumers
- public service announcements

IDEAS FOR 50TH ANNIVERSARY

- a survey of Canadians – the 50 healthiest mouths in the country
- a special edition toothbrush
- commemorative 50th Anniversary stamp
- a national coupon campaign
- 50th Anniversary Homecoming
- commemorative book or day planner
- Golden Anniversary Award or Hall of Fame
- parties organized by local societies
- floats in local Christmas parades
- a gold pin for members
- radio contests
- special events at City Hall
- participation at charity fundraising events

Countdown to 50 years of service to Canadians
Vers 50 ans de service à la population canadienne
CDHA ACHD

Those were just some of the ideas the National Campaign Planning Committee identified for both NDHW™ 2001 and the 50th Anniversary at the planning workshop in Ottawa.

What are your favourites?

What creative ideas can *you* add to the list?

What will you do in 2001?

E-mail us at info@cdha.ca, call us at (613) 224- 5515 or fax us at (613) 224-7283.

By working together and planning now, the year 2001 and the 50th Anniversary could mark our profession's *second-most* important date in history!

Travaillons ensemble pour promouvoir notre profession

Le comité de planification de la campagne nationale se met en branle pour 2001

La Semaine nationale de l'hygiène dentaire[MD] (SNHD[MD]) 2000 est maintenant chose du passé et nous pensons déjà à 2001. Les membres de l'Association peuvent être fiers de tout ce que nous avons accompli en 2000 et se tourner avec enthousiasme vers les plans pour la Semaine de 2001. Aujourd'hui, plus que jamais, les organisations provinciales et nationales travaillent ensemble pour promouvoir la profession d'hygiéniste dentaire.

Cette année, nous avons rejoint des millions de Canadiennes et de Canadiens avec des annonces publicitaires dans les deux plus grands magazines canadiens, c'est-à-dire *L'actualité* et *Maclean's*, sans compter le lien entre le site de Maclean's et celui de l'Association. Nous avons aussi fait diffuser des messages d'intérêt public de qualité professionnelle, tant en français qu'en anglais, sur les ondes des stations de radio d'un bout à l'autre du Canada afin de promouvoir la SNHD[MD]. De plus, les hygiénistes dentaires ont placé des affiches de la campagne bien à la vue de leurs clients dans leur cabinet. Mais le plus important est que des milliers d'hygiénistes dentaires d'un océan à l'autre ont exprimé leur fierté envers leur profession en utilisant la trousse de planification de la campagne pour donner aux gens de leur collectivité des renseignements importants sur la santé bucco-dentaire.

L'année 2001 promet d'être une année historique car elle marquera le 50e anniversaire de la profession d'hygiéniste dentaire au Canada. Voilà pourquoi le comité de planification de la campagne nationale, qui comprend des représentants des associations provinciales et nationales d'hygiénistes dentaires, a déjà commencé à planifier la plus grandiose SNHD[MD] jamais connue et à organiser les célébrations entourant notre demi-siècle de travail professionnel.

À la mi-septembre 2000, les membres du comité se sont rendus à Ottawa pour un atelier de planification d'une fin de semaine, organisé par Média Delta, la firme de publicité et de relations publiques de l'Association. Les membres du comité ont cerné les buts et les objectifs de la campagne :

- Susciter la participation de tous les membres passés, présents et futurs;
- Rejoindre tous les Canadiennes et Canadiens et susciter leur participation;
- Susciter l'attention des médias envers la profession d'hygiéniste dentaire;
- Et comme toujours, avoir du plaisir!

Puis, par une série d'exercices de remue-méninges, les membres du comité ont produit une liste d'activités et de moyens innovateurs de célébrer la SNHD[MD] 2001 et le 50e anniversaire de l'Association. Nous aimerions partager avec vous quelques-unes de leurs idées car nous voulons avoir vos commentaires!

IDÉES POUR LA SNHD[MD] 2001

- Participer à des salons du mieux-être physique.
- Visiter des établissements de soins de longue durée.
- Prendre part à des activités de financement dans le domaine de la santé.
- Établir des partenariats avec les divers mois de la santé.
- Publier des articles dans les journaux locaux.
- Placer des annonces dans les magazines pour les consommateurs.
- Placer des bannières publicitaires à des sites Web.
- Produire des affiches commémoratives.
- Organiser des concours radiophoniques avec la participation de commanditaires.
- Proposer des tatouages temporaires.
- Placer des publicités dans les transports en commun.
- Produire des insignes porte-nom de qualité professionnelle.
- Faire diffuser des publicités télévisées.
- Placer des publicités dans les magazines spécialisés.
- Produire des feuillets de conseils pour les consommateurs.
- Produire des messages d'intérêt public.

IDÉES POUR LE 50e ANNIVERSAIRE

- Faire un sondage pour trouver les 50 bouches les plus en santé au Canada.
- Produire une brosse à dent souvenir.
- Demander la production d'un timbre commémoratif.
- Organiser une campagne nationale de bons-rabais.
- Organiser une grande rencontre amicale du 50e anniversaire.
- Produire un livre ou un agenda commémoratif.
- Lancer un prix d'Or ou mettre sur pied un temple de la renommée.
- Demander aux sociétés locales d'organiser des célébrations.
- Inscrire un char allégorique aux défilés de Noël.
- Produire une épinglette en or à vendre aux membres.
- Organiser des concours radiophoniques.
- Organiser des activités spéciales aux hôtels de ville.
- Participer à des activités de financement d'organismes de bienfaisance.

Cette liste est un échantillon des idées soulevées par le comité de planification de la campagne nationale pour la SNHD[MD] 2001 et le 50e anniversaire de l'Association lors de l'atelier de remue-méninges à Ottawa.

Quelles idées préférez-vous?

Avez-vous d'autres idées à nous suggérer?

Que ferez-vous de spécial en 2001?

N'hésitez pas à communiquer avec nous par courriel à info@cdha.ca, par téléphone au (613) 224-5515 ou par télécopieur au (613) 224-7283.

En travaillant et en planifiant ensemble dès maintenant, l'année 2001 et le 50e anniversaire pourraient marquer la deuxième année la plus importante de notre histoire!

CDHA/Colgate Community Health Award

The Canadian Dental Hygienists Association (CDHA) in conjunction with Colgate Oral Pharmaceuticals, a subsidiary of the Colgate Palmolive Company, is proud to announce the CDHA/Colgate Community Health Award.

Dental Hygienists Volunteering in Their Community

This award program recognizes CDHA members and individuals who have implemented significant community volunteer programs that focus on preventive oral health care.

Award

The first-place award recipient will receive a commemorative award, a $3,000 donation, plus travel and hotel accommodations to the CDHA Annual Conference for one representative.

Selection

Selection will be conducted by the CDHA Community Health Award Committee. Committee decisions will be final.

Rules

Award recipients will be notified immediately following the selection. Presentations of the winner will be made at the CDHA Annual Conference.

Eligibility

Eligibility is limited to CDHA members.

- Community projects are those that document a community need and have specific measurable objectives.
- Community programs must involve volunteer dental hygienists and may include other members of the oral health care team.
- Examples of community projects are
  - Underserved populations
  - School programs
  - Programs for special populations
  - Media public information programs
- Any component or member or group of members responsible for implementing a volunteer community program concerned with some aspect of preventive oral health may submit an entry.
- The number of entries is not limited. An entry may be submitted by an individual, a group of individuals or a component; however, duplicate entries submitted will not be considered.

Ineligibility

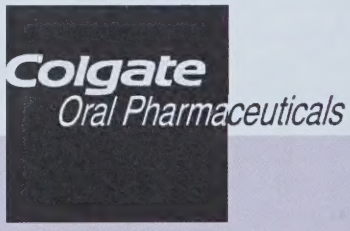
The CDHA/Colgate Community Health Award was created to recognize the volunteer efforts of CDHA members. Examples of ineligible entries would be

- Entries/projects which allow students to fulfill scholastic requirements.
- Entries/projects in which participating dental hygienists are paid a salary for any portion of the entry/project.
- Entries/projects submitted by an employee or family member of the Canadian Dental Hygienists Association (CDHA), the CDHA Community Health Award Committee, the Colgate-Palmolive Company or its subsidiaries.
- Entries/projects for out of country programs.

Submission of Entry

- All entries must be accompanied by a signed application available from the CDHA Central Office.
- All entries must be received in the CDHA's Central Office no later than **Friday, December 15, 2000**.
- A description of not more than 2–3 typewritten, double-spaced pages, including a 100-word summary, must be submitted along with the supporting documentation.
- Information on the amount and source of program funding, as well as how the money will be used, must be included.
- Personal job descriptions, resumes, and/or curricula vitae should not be submitted.
- Entry materials must be typed or printed.
- Entry materials will not be returned.

Application Request



The CDHA/Colgate Community Health Award Application Request

Name _____ Signature _____

Home Address _____

City _____ Province _____ Postal Code _____

Telephone _____ Fax _____

The deadline for applications is **Friday, December 15, 2000**. The recipient of the grant will be notified by **Friday, March 15, 2001** and will have one year to implement the initiative. Entire entries must be received in the CDHA's Central Office.
Please send to: Canadian Dental Hygienists Association, 96 Centrepointe Drive, Ottawa ON K2G 6B1

Member Services Notes

Membership applications were sent by 1st Class Mail to all dental hygienists at the end of August, 2000 and a 2nd Notice application was included in the polybag with the Sept/Oct *Probe*. If you haven't sent in your renewal yet, please do it now so you won't miss the exciting news coming in the next issue of *Probe*. If you require a customised payment plan, call us and we will be happy to discuss options with you. You can send your payment by:

Mail to: CDHA, 96 Centrepointe Dr., Ottawa ON K2G 6B1
Fax it: with a Visa or Mastercard # to (613) 224-7283
E-mail us at: svw@cdha.ca
Via our Web site at: www.cdha.ca
Call us: with a Visa or Mastercard # at 1-800-267-5235

NOVA SCOTIA and NEWFOUNDLAND require proof of membership as a prerequisite to license. Join early to ensure receipt of valid documentation is attached to your license renewal.

CONGRATULATIONS! to Carol Gulliford the winner of the CDHA Early Bird Membership Draw. Mrs. Gulliford will receive a refund cheque for the CDHA portion of her membership fee.

WARNING!

Do not be fooled by representatives from alternate insurance companies trying to sell you more insurance. The Malpractice coverage you obtain as a benefit of Active membership is more than ample coverage. The very few who are required to obtain more coverage can contact CDHA and we can arrange to provide the additional coverage at still a reduced cost to the member.

Reminders!

Malpractice Insurance coverage for the year 2000, ends as of midnight December 31st. Anyone requiring proof of coverage for the year 2001, must contact CDHA immediately and arrange payment for an Active membership.

Four provinces (AB, BC, ON, SK) require proof of Liability (Malpractice) coverage as a pre-requisite to license.

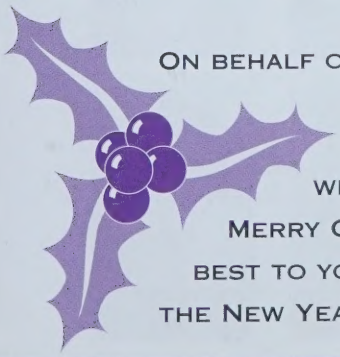
LICENSING RENEWAL DATES:

AB - Nov. 1	NB - Jan. 1	ON - Jan. 1
SK - Jan. 15	BC - Mar. 1	NF - Nov. 30
PE - Apr. 1	MB - Jan. 15	NS - Nov. 30
QC - Apr. 1		

CDHIP (Canadian Dental Hygienists Insurance Plan)

CDHA has produced a portfolio which contains information on various insurance available only to our members through a group insurance plan. Our members expressed the need for direction with insurance matters. CDHA in response hired an Insurance Consulting company (Heath Lambert Benefits Consulting Inc.). This company investigated the insurance industry and helped CDHA design and negotiate these insurance plans specifically for their members, dental hygienists. This is why when you purchase insurance through your Association, you are never alone. We are always there ourselves or through our insurance advocate, to assist our members with questions or concerns regarding their particular coverage should the need arise. Refer to your membership brochure or call CDHA for further information on what is available.

Heath Lambert Benefits Consulting Inc.



ON BEHALF OF THE STAFF IN THE MEMBERSHIP DEPARTMENT, MAY I WISH YOU ALL A VERY MERRY CHRISTMAS AND ALL THE BEST TO YOU AND YOUR FAMILY IN THE NEW YEAR.

2001 september 21-23 CDHA ACHD
A Dental Hygiene Odyssey
genesis

CDHA's 12th Annual Professional Conference will take place in Mississauga, Ontario, September 21st-23rd, 2001.

Planning *for the new* Millennium...

MISSION

The Canadian Dental Hygienists Association, as the collective voice of dental hygiene in Canada, is dedicated to advancing the profession in support of our members and contributing to the health and well-being of the public.

The Canadian Dental Hygienists Association (CDHA) exists for members to have a strong, collective, influential voice at the national level addressing:

- member needs;
- policy for the advancement of dental hygiene practice and education;
- support for Canadians to value oral health as part of wellness; and
- professional growth for dental hygienists.

CDHA is the national voice representing 9,610 dental hygienists in Canada, establishing policy for the dental hygiene profession. CDHA was founded in 1964 and has completed 35 years of service to dental hygienists and the Canadian public.

The Board of Directors meet twice a year to set policy direction for the Association.

What does Your Association Do for You?

FOR CDHA MEMBERS ONLY:

- automatic CDHA legal defense coverage with national/provincial membership;
- automatic CDHA malpractice insurance with national/provincial membership;
- access to CDHA personal insurance for life, health, long term disability, home and auto, retirement planning through the Canadian Dental Hygienists Insurance Plan (CDHIP);
- access to CDHA commercial general liability - important for all dental hygienists working on contract or having self-employed status (as defined by Revenue Canada);
- CDHA members-only access on the CDHA web site;
- CDHA resource centre, which provides packages on current information;
- CDHA bi-monthly Journal, *Probe*, bi-annual newsletter *Explorer*;
- CDHA Annual Conference (continuing education and professional development);
- CDHA Fact Sheets for public distribution;
- CDHA national dental hygiene billing process; and
- CDHA toll-free line for information and assistance.

BOARD OF DIRECTORS

LYNDA MCKEOWN (PRESIDENT)

SALME LAVIGNE (PRESIDENT ELECT)

DONNA BOWES (PAST PRESIDENT)

DIANNE STOJAK (BCDHA)

PATTI WICKSTROM (ADHA)

ANGIE YARNTON (SDHA)

NATASHA KRAVTSOV (MDHA)

BARB GIBB (ODHA)

KAREN WOLF (NSDHA)

KATHLEEN TRITES (NBDHA)

CINDY HOLDEN (NDHA)

PATTI SINNOTT-CURRAN (PEIDHA)

CHANTAL NORMAND (QUÉBEC)

SUSANNE SUNNELL (DHEC)

CHARLENE HAMILL (FDHRA)

ON BEHALF OF CDHA MEMBERS FOR THE PROFESSION:

- National Dental Hygiene Week™;
- National Code of Ethics and National Practice Standards, recognized by all dental hygiene regulatory authorities;
- CDHA/Oral-B Graduate Student Research Awards (Masters and PhD), CDHA/Oral-B Dental Hygiene Student Scholarship, CDHA/Colgate Community Health Award, CDHA Dental Hygiene Research Grant and CDHA/DCF Endowment Fund;
- self-regulation support to provincial associations;
- support of the establishment of the National Dental Hygiene Certification Board (NDHCB), and Dental Hygiene Educators Canada (DHEC); and
- a student program for dental hygiene schools across Canada.

ON BEHALF OF MEMBERS FOR THE PUBLIC:

- CDHA website information;
- CDHA/Colgate Community Health Award;
- CDHA National Public Awareness Campaign: "Canada's Dental Hygienists - The Prevention Professionals";
- initiatives to inform the public of new legislation to expand access to dental hygiene care;
- alliances with other health professionals; and,
- the Crest Student Booklet and Crest Teacher's Guide.

ON BEHALF OF MEMBERS - THE NATIONAL VOICE OF DENTAL HYGIENE IN CANADA:

- linkage with:
  - Health Action Lobby (HEAL);
  - Canadian Dental Association (CDA);
  - Canadian Public Health Association (CPHA) literacy program;
  - American Dental Hygienists Association (ADHA);
  - International Federation of Dental Hygienists (IFDH); and
  - National Dental Hygiene Certification Board (NDHCB);
- federal representation to:
  - Minister of Health (Health Care Delivery);
  - Minister of Finance (Health Care Finance);
  - Revenue Canada (Self-Employment);
  - Industry Canada (Labour Mobility);
  - Immigration Canada (Entry of Foreign Applicants);
  - Human Resources Development Canada (Employment and Planning); and
  - Trade and Commerce (Inter-provincial trade).

A *Message* from the *President* (Chair)

Leadership is the capacity to formulate a coherent vision and the ability to translate it into reality. The Board has comprehended and assumed this responsibility.

The CDHA shares the vision: "advancing the profession, supporting members and contributing to the health and well-being of the public" in a way that generates enthusiasm and commitment.

For example, the national communication campaign, representation among various stakeholders both nationally and internationally, increase awareness among members and the public. The CDHA intends to influence public policy in oral health and to press government for the recognition of dental hygiene as a qualified knowledgeable provider of oral health care. Also, the CDHA continues to establish strategic alliances and partnerships for increased recognition and acceptance.

Conference participation and attendance increased at the conference in Victoria, BC this summer. We expect this pattern to continue in Mississauga, September 21st-23rd, 2001.

Members renewing membership, and colleagues joining for the first time, indicate confidence in the organization's growth and strength, as the 'collective voice' for dental hygiene.

Every organization goes through evolutionary changes and the CDHA is no different.

The CDHA formalized its relationship with a legal counselor in Ottawa, Mr. P. Augustine. He has been retained to represent and assist the organization with redoing bylaws, drafting contracts and other matters of the Board as necessary. His knowledge of the organization will provide consistency in legal information for the Executive Director and future Boards.

Much of 2000 was spent in the search for a new Executive Director. Human Resources Consultant, Ms. Curran, provided the expertise to guide us in this process. The successful candidate, Susan Ziebarth, has experience as an Executive Director. There is no question that her skills, knowledge and established networks will help advance the profession of dental hygiene.

Each province in Canada has issues that are major concerns for dental hygiene. The CDHA continues to 'wrestle' with these. The CDHA will proudly continue to provide leadership at the International level.

The Board of Directors believes that the CDHA is poised and ready to 'leap into the future'. The experience and resources of the CDHA are set on a steady course. The CDHA is ready, and eagerly awaits the propitious unfolding of the events ahead.

The CDHA thanks Carol Matheson Worobey for her years of service and leadership in bringing the CDHA to this point in its history. We wish her well in her retirement.

On behalf of the Board of Directors and administration, I take this opportunity to thank you, the members. The CDHA appreciates your frequent encouragement and loyal support.

Lynda McKeown

Lynda McKeown, RDH, HBA, MA
President 1999 - 2000

HIGHLIGHTS OF THE 1999-2000 YEAR

PROVIDING A STRONG NATIONAL VOICE

- The Board of Directors shared the results of their strategic plan and CDHA's new Mission with Provincial Dental Hygienists Associations, Dental Hygiene Regulatory Authorities, Dental Hygiene Educators Canada (DHEC) and with all CDHA members in Canada (through CDHA *Explorer*, May/June 1999), soliciting input.
- CDHA, throughout the year, represented dental hygienists in Canada at meetings with:
- American Dental Hygienists Association (ADHA);
- Canadian Dental Association (CDA);
- Canadian Public Health Association (CPHA);
- Canadian Commission on Health Services Accreditation;
- National Health Action Lobby;
- Minister of Health, Honourable Allan Rock;
- Canadian Life and Health Insurance Association (CLHIA);
- National Dental Hygiene Certification Board (NDHCB);
- Commission on Dental Accreditation of Canada (CDAC); and
- Canadian Child Care Federation (CCCF).

PROMOTING YOUR VALUE TO THE PUBLIC

Our National Public Awareness Program promoting and identifying dental hygienists to the public was unveiled in 1998. Through magazine advertising, media relations and dental hygienists' involvement from coast to coast, the public is being reminded of the professional care and educational background dental hygienists provide. The program was expanded in 1999 to include additional media coverage and materials.

We also saw the introduction in 1998 of the CDHA website, a source of information for the public and dental hygienists alike. CDHA will continue to expand the site adding increased links and resources.

Momentum continues to build on the sponsorship front. Joining Warner Lambert in year 2000 as CDHA Corporate Partners are 3M, Oral-B and Trident Advantage. All of our sponsors are leaders in their field and provide their support to CDHA by investing in communication vehicles to help promote the dental hygiene profession and to reach the Canadian public. Those vehicles range from National Dental Hygiene Week™ initiatives, to student calendars, scholarships and website initiatives.

LISTENING TO YOUR NEEDS

In early 1999, CDHA met with insurance carriers that will allow CDHA to provide legal defense costs as a member benefit included with dues, at no additional cost.

CDHA now has an insurance advocate who works with our members and the insurance companies who are members of the Canadian Dental Hygienists Insurance Plan (CDHIP), should your claims require review.

CDHA continues to meet with dental insurance companies, the Canadian Life and Health Insurance Association (CLHIA), dental consultants and the federal government to discuss and enhance the CDHA National Dental Hygiene Billing System for dental hygienists providing direct care to the public.

An additional toll-free line has been added to Central Office to assist in members inquiries. Many inquiries are also reaching us via our e-mail address at *info@cdha.ca*

All dental hygiene students across the country are now better informed with the CDHA student calendar. This handy reference provides dates and background on CDHA history as well as the Code of Ethics, Practice Standards and insurance programs.

ADVANCING THE PROFESSION

The Journal *Probe* has now been restructured to enable two of the six issues to be strictly devoted to Scientific Research. The development of this new Scientific Journal provides further opportunity for dental hygienists to contribute to the dental hygiene body of knowledge and educational growth required of a profession.

The Annual Professional Conference was held in Victoria BC, and provided a place for dental hygienists to come together, learn from one another and recognize the collegial bond that is shared coast to coast. It also provided an educational and professional growth program that was uniquely focused on the needs and interests of the dental hygienist.

As the policy making body for the dental hygiene profession, CDHA has struck a task force to define and develop framework for post-diploma education in Canada. Building on the *Framework for Dental Hygiene Education in Canada - 2005* (CDHA, 1998) and identifying requirements for health professionals in 2005 (PEW, Health Professions Commission), CDHA will work with dental hygiene educators and regulators to provide direction for the future educational needs of the profession.

AWARDS

The 2000 CDHA/Colgate Community Health Award recipient is Judy Lochhead of Melita, Manitoba.

The 1999 CDHA Student Scholarship Award recipient is Heather Pernisie of Kelowna, B.C.

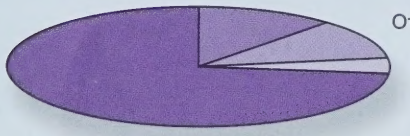
CDHA EXTERNAL REPRESENTATIVES

- National Dental Hygiene Certification Board (NDHCB);
- International Federation of Dental Hygienists (IFDH); and
- Commission on Dental Accreditation of Canada (CDAC).

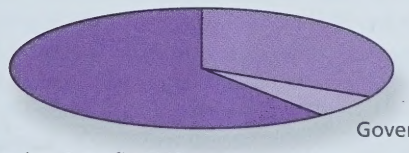
CDHA CENTRAL OFFICE

Back Row L-R: Louise Lalonde, Sandra VanWart, Angela Whelan and Monique Belleau Rock. Front Row L-R: Shelly Minnie and Françine Fortin. Missing: Carol Matheson Worobey (inset).

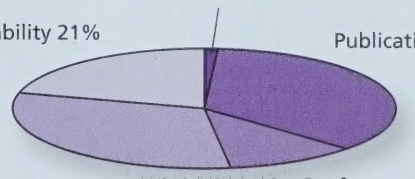
REVENUE (MAY 99 - APRIL 00)



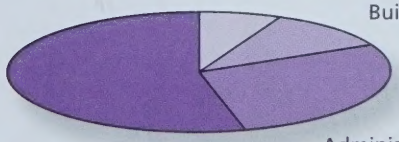
EXPENDITURES (MAY 99 - APRIL 00)



EXPENDITURES - MEMBER BENEFITS (MAY 99 - APRIL 00)



EXPENDITURES - ADMINISTRATION (MAY 99 - APRIL 00)



CUMMINGS & GALLAGHER

CHARTERED ACCOUNTANTS

KENNETH E. CUMMINGS, C.A.
KEITH R. GALLAGHER, C.A.

Tel.: (613) 727-0494 Fax: (613) 224-6996
1580 Merivale Road, Suite 500
Nepean, Ontario K2G 4B5

AUDITOR'S REPORT

To the Members of the Canadian Dental Hygienists Association /L'Association canadienne des hygiénistes dentaires

We have audited the statement of financial position of the Canadian Dental Hygienists Association/ L'Association canadienne des hygiénistes dentaires as at April 30, 2000 and the statement of operations and changes in net assets for the year then ended. These financial statements are the responsibility of the Association's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Association as at April 30, 2000 and the results of its operations for the year then ended in accordance with generally accepted accounting principles.

CHARTERED ACCOUNTANTS

Nepean, Ontario

May 30, 2000

CDHA ACHD
THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

96 Centrepointe Drive, Ottawa, ON K2G 6B1
Telephone: (613) 224-5515 Fax: (613) 224-7283

Dental Hygiene Educators Canada (DHEC)

Officially Established

Dental Hygiene Educators Canada/Éducateurs en hygiène dentaire du Canada (DHEC/EHDC) is now officially established with the passing of the Letters Patent & By-laws and the election of the Board at the Annual General Meeting held June 8th, 2000, Victoria, B.C. The Board consists of seven (7) regional representatives of Canada and four (4) directors-at-large. The board members are as follows:

REGIONAL MEMBERS:

Atlantic Provinces Terry Mitchell, Dalhousie University
Québec Vacant
Ontario Evie Jesin, George Brown College
Manitoba Laura MacDonald, University of Manitoba
Saskatchewan Nancy Bateson, SIAST
Alberta Eunice Edgington, University of Alberta
British Columbia Patricia Noble, College of New Caledonia

DIRECTORS-AT-LARGE:

Margaret Wilson, University of Alberta
Sylvie Martel (on leave from La Cite and working with DENTSPLY, Canada)
Dianne Landry, NDHCB
Susanne Sunnell, Vancouver Community College

The Board met on June 9th, 2000 in Victoria, B.C. for the first Dental Hygiene Educators Canada/Éducateurs en hygiène dentaire du Canada Board Meeting. At this meeting the following elections occurred:

Laura MacDonald	President
Margaret Wilson	Vice-present
Terry Mitchell	Past-president position

There are three types of membership: 1) institutional 2) individual and 3) corporate. Keep an eye out for the membership drive. Each educator is invited to become an individual member. Some benefits of individual membership are: participation in email conversation with other members; involvement in DHEC educators workshops held annually; eligibility for nomination to a director-at-large position on the Board; and your individual support of an organization established for dental hygiene educators.

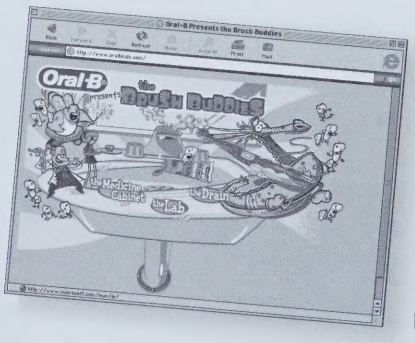
At the most recent DHEC Educators Workshop, participants enjoyed the exchange of ideas regarding dental hygiene education issues. They did so by participating in an Open Technology Approach. Not only did they get actively involved in the workshop, but they also learned a new teaching tool while doing so!

Probing *the* Net

Once again I am here to creatively provide opportunities for you to improve your knowledge base. This time around I hope the sites I connect you with will not only be informative but they will provide some enjoyment, not only for yourselves but also for family, friends, students and perhaps even clients.

Students from the Class of 1997 at our very own University of Manitoba created the first site. "The Wisdom Tooth" site provides detailed information on topics such as: Wisdom Teeth, Brushing Tips, Flossing Tips, What's a Dental Hygienist?, Facts and Trivia about Toothpaste, Tips for Parents, FAQ's, Oral Health Concerns, and Links. The Wisdom Teeth section is very informative and would be an excellent site to send a questioning client. You can visit this site at: http://www.umanitoba.ca/outreach/wisdomtooth/index.html

When I was visiting this site I connected to the Links and visited the Oral-B Care Center site. This site has greatly improved by updating its layout and information. Choices include a Professional Connection, Teaching Tools, Company Information, Product Catalog and more. For those of you who visit elementary schools the Teaching Tools resources is one of the best I have come across yet. They offer two excellent five (5) day lesson plans with both written material and



activity masters (which can be downloaded fairly easily by completing the instructions) for two age groups. Be sure to check out this site before you plan your next classroom visit!

http://www.oralb.com/

From this site I connected to: http://www.oralbkids.com

I have written about children's' web pages before but this time I decided to let my two boys (10 and 9) to help me research this site. After two days of heavy investigations the consensus was given: AOK!

They found it easy to use with very little assistance from me (I needed to download a macromedia shockwave player so they could play the game PLACK ATTACK). This site has three sections: The Medicine Cabinet, The Lab, and The Drain. In the Medicine Cabinet children will learn how to brush, floss, and choose toothbrushes and toothpaste. At The Lab, they will find Screen Scenes, Gross Flavors Contest and Cool Games. The Drain features a Mouth Museum, which takes the child on a historical journey about teeth, a Fortune Tooth game, and much more.

I hope you enjoy these sites and please feel free to write to me with any interesting sites you have come across while Probing the Net.

Until next time.

An Invitation to Professionalization

President's Message continued from page 1

level. Now, all of these so called parallel professions have not only attained professional status with baccalaureate degrees required for entry to practice in most provinces, but physical therapy and speech pathology have presented proposals to raise the bar to the Masters level for entry into the profession! When non-regulated health care workers refer to dental hygiene as a parallel profession, I shake my head and say "what has become of us"! If we are not considered as a true health profession, how can we participate as an equal player with our former counterparts, such as nurses and physical therapists, in the ever-evolving multidisciplinary health care system?

Another rude awakening has been the revelation that NAFTA does not recognize dental hygiene as a profession because it does not have the educational standards at the baccalaureate degree or higher. This creates a major barrier for dental hygiene when it comes to portability to the United States. Numerous dental hygienists write the American Dental Hygiene Board Examination each year with the illusion that they will then be eligible for licensure and employment in the United States. The first part of the assumption is correct, however, there is currently no mechanism in place for legal entry into the United States for Dental Hygienists according to the U.S. Immigration and Naturalization Service (INS) unless they possess a four year degree or higher. Worse yet, the CDHA has been informed that this will never change unless the educational standards start at the baccalaureate level!

The final blow to my increasingly fragile ego occurred when I read in a recent issue of *Reader's Digest* that Dental Hygiene, along with hairdressing was one of the up and coming occupations! I don't know about you, but that does not sit very well with me.

I guess the question that we have to ask ourselves as a discipline is whether we are ready to take the final step towards professionalization. But what will that mean for the majority of dental hygienists who do not possess a degree? I for one am convinced that any decisions to raise the bar for our profession as a whole should become essential for only those graduates of programs commencing in the new format. It would be highly unfair to expect past graduates to all scramble around pursuing degree status. We would have absolute chaos within the profession! However, the one bonus would be that all past graduates who wish to complete a degree in dental hygiene, as numerous surveys indicate to be the case, would have multiple options open to them which are presently not available.

With a baccalaureate degree as entry to practice, the barriers which currently exist in our profession preventing us from vertical educational growth; professional respect; and international portability would finally be removed! I believe, it's time for some serious thinking about our professional status. What do you think?

Season's Greetings!

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION'S CENTRAL OFFICE WILL BE CLOSED DURING THE HOLIDAY SEASON FROM DECEMBER 24 TO JANUARY 1, 2001.

Classifieds

PRINCE ALBERT, SASKATCHEWAN Progressive dental practice requires dental hygienist for maternity leave with the possibility of permanent employment. Please forward resume to: Dr. Robin Slowenko & Associate, 1403 Central Avenue, Prince Albert, SK S46 7J4 Tel.: (306) 764-4144

VANCOUVER ISLAND, BRITISH COLUMBIA EXEMPLARY DENTAL HYGIENISTS WANTED Need a job change? Unemployed? Frustrated? Join our elite placement force in beautiful BC and find the perfect match to all your employer needs. Confidentiality is assured. It's easy, convenient and free. Call Maggie at Dental Fill-Ins Personnel – 250-753-1008. Serving Vancouver Island's Dental Professionals since 1997.

DENTAL-AID PERSONNEL, BRITISH COLUMBIA Dental-Aid Personnel is a professional staffing service providing, permanent and temporary relief to dental offices since 1987. We have an extensive growing client base reaching from Greater Vancouver through the Fraser Valley and are continually seeking dedicated and professional dental hygienists. For more information, phone 604-524-3904, fax 604-925-9223, E-mail: jchung@planeteer.com

NORTH SHORE DENTAL TEMPS INC., BRITISH COLUMBIA "North Shore Dental Temps Inc." services the entire Greater Vancouver area and Vancouver Island. We are looking for qualified dental hygienists for a variety of part time and full time positions. For further details, phone 604-990-8777, fax 604-990-8762, E-mail: nsdentaltemps@telus.net

COMOX, BC Energetic, self-motivated dental hygienist wanted for a busy family oriented practise in the beautiful Comox Valley. This is a part time or full time position. Emphasis is on perio/prevention. Applicants should be interested in being an intregal team member, and a sense of humour is a plus! Fax resume to: (250) 339-2285 or mail to: Dr. T. Blasco, 1710 Comox Avenue, Comox, BC V9M 3N2

NORTHWEST TERRITORIES CANADIAN LICENSED DENTAL HYGIENIST Position for full-time dental hygienist available in a well established practice in the busy city of Yellowknife. Modern, well equipped, fully computerized dental office with excellent support staff. Please send resume to: Box 2615 Yellowknife, NWT X1A 2P9 or fax to (867) 873-5032

MANITOBA dental hygienist required for busy general practice in Manitoba, 6 hours north of Winnipeg. Must have received certification for administering local anaesthetic and for performing restorative procedures. $40.00 hourly to start. 204-623-6162 (w), 204-623-1494 (h)

www.dental-locums.com is a free service which connects practices, dentists and dental hygienists for long and short term job positions. An online form allows you to list your details or you can fax them to: 604-922-8407. Practices or individuals can also have their own page linked to this site.

JOB OPPORTUNITIES IN SWITZERLAND Do you like to travel? Many openings for adventurous dental hygienists in Switzerland. Good salary, 4 weeks paid vacation. One year experience an asset. Contact me for more information. Pia Kolliker, Dental Hygienists Overseas, Placement Service. Telephone (250) 493-8827, Fax (250) 493-8854, E-mail: riehenbc@home.com

SWITZERLAND The "Dental Connection" once again, is seeking ambitious and adventurous dental hygienists for a 1 – 2 year work term in beautiful Switzerland. Excellent salary, many holidays, and living in accommodations arranged. Please contact: Dental Connection, 83 Abbott Avenue, Toronto, Ontario M6P 1H5 Phone: 416-828-5024 E-mail: dental-connection@sympatico.ca Attention: Andrea

BRITISH COLUMBIA Dental hygienist wanted 1, 2 or 3 days/week. Excellent work conditions. Good earnings. Please reply to Luciete at # 604-874-6734 or 604-872-7877

BC – LOWER MAINLAND – SOUTH SURREY, FULL TIME DENTAL HYGIENIST REQUIRED Excellent opportunity to join an energetic and friendly team. Replacing dental hygienist (going to Switzerland). New office in plaza/mall in very rapidly growing, desirable area. Current "top of the line" equipment and supplies including computerized charting and intraoral cameras. Please fax resumes to (604) 576-9444.

DENTAL HYGIENIST WANTED PRINCE RUPERT, BC Established, quality oriented dental practice in Prince Rupert is looking for an enthusiastic, self-motivated dental hygienist to become part of our team. Enjoy great outdoor recreation and the warmth of our close community. Position is available January 8, 2001. Pay is based upon relative experience. Approximately 32-40 hours per week-mainly Monday – Thursday with some Fridays. Contact Linda at 250-624-3198 days, 250-624-4253 evenings, or Christine at 250-624-3403 evenings. Resume: Dr. Ian McMillan, 104-115 8th Avenue West, Prince Rupert, BC V8J 2P4 Attention: Linda Rae.

CHILLIWACK, BC Busy modern dental office requires a dental hygienist, full-time. Please call (604) 792-7354 or fax resume to (604) 792-3216.

"HEALING HERBAL LIP BALM" Ideal for use in-office or home. Handcrafted by a dental hygienist using organic ingredients. Soothing for dry, chapped, sunburnt lips and cold sores. 25ml. Jar - $8 plus $3.50 postage. Send to T. Gouweloos, RR2, Oro Station, Ontario L0L 2E0. E-mail: gouweloo@barint.on.ca.

Classified Ad Rates

Fifty (50) words or less, $25.00 (plus 7% GST). Additional words: $0.50 per word (plus 7% GST).

Deadline	*December 10*
Issue	*January/February*
Circulation Date	*January 15*

NOT ALL TRAYS ARE CREATED EQUAL: AN ANALYSIS OF FLUORIDE TRAY FIT

BY SALME LAVIGNE, Dip.D.H., B.A., M.S. (DH)

Associate Professor and Director
School of Dental Hygiene
Faculty of Dentistry
University of Manitoba
Winnipeg, Manitoba

Formerly Chair, Department of Dental Hygiene,
Wichita State University, Wichita, Kansas

KEY WORDS: fluoride trays, fluoride tray efficacy, fluoride tray fit, fluoride tray design

ABSTRACT

The tray method of delivering topical fluorides to teeth has become the most common method of application. Little evidence can be found in the literature regarding the fit of these trays despite the indication by numerous authors to the importance of tray fit. The purpose of this descriptive study is to visually compare the design and fit of five single and dual fluoride tray designs currently commercially available. These trays were analysed by fitting large size trays of each brand on two adult typodonts, both a standard mouth and a periodontally involved mouth. Four general categories with 16 (single tray) and 18 (dual tray) criteria were developed to evaluate the tray design and fit. Results rated Oral-B trays as excellent in 81% (single tray) and 89% (dual tray) of categories; Butler trays were rated as excellent in 27% (single) and 22% (dual) of categories; Schein/Quala received no excellent ratings in the single tray categories but did receive 6% excellent ratings in the dual tray categories as did the Sultan brand. Patterson/Arcona brands received 6% excellent ratings in the single tray categories with none in the dual tray criteria. Only Kerr dual trays were evaluated receiving no excellent ratings in any of the categories. Numerous deficiencies were noted in all but the Oral-B trays. This study clearly demonstrates how differently various brands of trays adapt to typodont tooth surfaces and provides the reader with a point of reference for the selection of fluoride tray brands.

INTRODUCTION

The topical application of fluorides as an effective means of inhibiting dental caries has been well recognized in the dental literature since the 1940's. The American Dental Association and the U.S. Food and Drug Administration have approved these agents for twice annual application for the reduction of dental caries.[1] Additionally, the Canadian Dental Association continues to endorse the selective use of professionally applied topical fluorides for patients at risk for caries.[2] These topical applications have progressed from solutions containing stannous and sodium fluorides to thixotropic gels containing acidulated fluoride phosphate and most recently to fluoride foaming agents containing APF and neutral sodium fluorides.[3,4] During this period of considerable improvement in optimizing the therapeutic topical agents themselves, the methods and products used to apply these agents have received little attention in the scientific literature.

The fluoride tray method has become the most popular method of applying topical fluoride formulations.[1,5] The tray method is currently recommended by the Canadian Dental Association.[2] One advantage of using the tray method is that the entire mouth can be treated simultaneously[6]. Additional advantages include: better isolation of the hard surfaces, delivering the fluoride directly to the teeth with little soft tissue contact, which can occur with the paint-on or brush-on techniques; minimizes the contamination and dilution by saliva that also occurs with alternative techniques; best coverage of all tooth surfaces; more time-efficient and therefore cost effective; greater patient comfort; and it is the safest method in terms of reducing ingestion of fluoride. Inadequate tray fit could seriously compromise the efficacy and safety of the fluoride treatment. The most serious problem cited in the literature is that of fluoride ingestion.[7,8,9] The techniques used to apply professional strength topical fluoride gels and foams deserve close examination in order to be both safe and efficatious. The trays must mold to the contours of the arch to hold in the fluoride and provide a distal dam that effectively closes off the posterior border of the tray to prevent fluoride from escaping from the back and being ingested. Optimal anti-caries efficacy requires the topical fluoride to contact all caries prone surfaces. If the method of delivery results in anything less than total tooth contact, even the most efficient topical fluoride agent will be rendered less effective and the quality of the treatment will be compromised.

Despite the lack of literature on the fit of fluoride trays, numerous authors have expressed the importance of tray fit.[1,2,3,10,11] Notable differences exist between the numerous commercially available tray designs. One study by McCall[9] demonstrated significant differences between various tray delivery systems during an assessment of the distribution of APF gel on tooth surfaces. Results of this study confirmed that gel distribution varied depending on the tray type employed. Therefore the purpose of this study is to visually compare the design and fit of five popular fluoride tray designs currently commercially available.

METHODS AND MATERIALS

Five single tray designs including six tray brands (Oral-B[a]; Butler[b]; Schein[c]; Quala[d]; Patterson[e]; and Arcona[f]) featured in Figure 1 and five dual tray designs including eight tray brands (Oral-B Centwins[a]; Butler[b]; Schein[c]; Sultan[g]; Quala[d]; Patterson[e]; Arcona[f]; and Kerr Discovery[h]) shown in Figure 2 were evaluated visually by the author. Due to design duplication between some of the tray brands, Schein/Quala (SQ) and Patterson/Arcona (PA) single arch trays; and Schein/Sultan/Quala (SSQ) and Patterson/Arcona (PA) dual arch trays, these brands were grouped together. The analysis was standardized by using the large size trays, and fitting each brand to two typodonts Model KC.7, a standard adult mouth and Model P2D-001, a periodontally involved adult mouth (Nissin Corp). Both typodonts were designed to include central incisor to second molar teeth, with third molars not included. The typodonts were held in position to assure that the angle used to photograph the various brands of applicator trays would be comparable and not favour one brand over another. Slight finger pressure was applied to the maxillary arch in order to simulate masticatory effect.

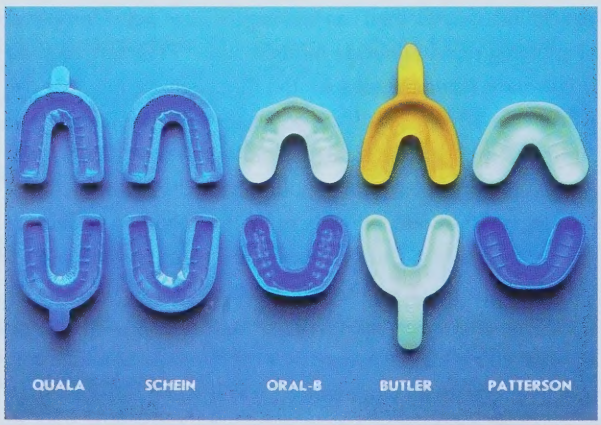


figure 1: Single Arch Designs

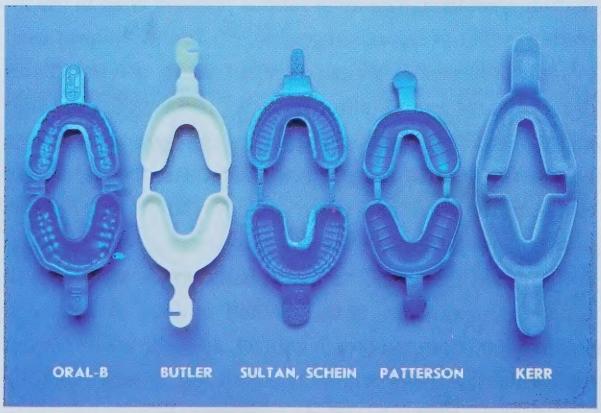


figure 2: Dual Arch Designs

a. Oral-B Laboratories, Belmont, CA, USA
b. John O. Butler Company, Chicago, IL, USA
c. Schein Dental, Melville, NY, USA
d. Quala (Ash Temple), Don Mills, Ontario, Canada
e. Patterson Dental Company, St. Paul, MN, USA
f. Arcona (Henry Schein), St. Catherines, ON, Canada
g. Sultan Dental Products, Englewood, New Jersey, USA
h. Kerr Corporation, Orange, CA, USA

Photographic records including frontal and lateral views were used to compare tray designs and brands. Four categories of criteria were developed to evaluate the fit of each tray on the typodonts. These criteria were as follows:

1) ANATOMICAL FIT CRITERIA

- Natural Rounded Arch Shape
- Natural Interior Occlusal Anatomy
- Natural Overbite in Use

2) EFFICACY CRITERIA

- Anterior Vertical Coverage
- Posterior Vertical Coverage
- Posterior Reach Coverage
- Distal Dam Depth
- Capillary Vacuum Seal
- Sizing/Close Fit to Tooth Surfaces
- Perforated Tab to Preclude Displacement

3) PATIENT COMFORT/ACCEPTANCE CRITERIA

- Sturdiness/Stability
- Comfortable, Non-Sharp Edges
- Non-Protruding Hinge Design (duals only)
- Visual Patient Acceptance (duals only)

4) EASE OF USE CRITERIA

- Fill Line Demarcation
- Clearly Differentiated Upper and Lower
- Tabs to aid Placement and Removal
- Non-Flimsy Construction

Each tray was rated for each criterion as either excellent, good, fair, poor or none. In the category of Patient Comfort/Accept-

ance criteria, it is recognized that these criteria are not as significant in this in-vitro study but would be extremely important to patients in the clinical setting.

RESULTS

The results of the evaluation of the single arch trays are shown in Table 1. There were sixteen points of performance/efficacy criteria. Oral-B trays were rated excellent in 81% of criteria, with remaining 6% good and 13% none for absence of perforated tabs. Butler trays were 27% excellent, 38% good, 19% fair, 6% poor and 13% for absence of fill line demarcation and non-existent natural occlusal anatomy. The Schein/Quala trays received no ratings in the excellent category, 25% good, 25% fair and the remaining 50% were rated as poor for natural rounded arch shape, anterior vertical coverage, sizing, perforated tabs, sturdiness, fill line demarcation, clearly differentiated upper and lower arches and non-flimsy construction. Ratings for the Patterson/Arcona trays included 6% excellent, 25% good, 31% fair, 25% poor for posterior vertical coverage, posterior reach coverage, distal dam depth, and fill line demarcation and 13% none for perforated tabs to aid placement/removal.

The dual arch tray evaluation results are exhibited in Table 2. There were 18 performance/efficacy criteria by which these trays were evaluated. The ratings for the Oral-B trays were excellent in 89% of the criteria and good for the remaining 11%. Butler trays were 22% excellent, 39% good, 22% fair, 6% poor for capillary vacuum seal and 11% none for lack of natural interior occlusal anatomy and fill line demarcation. The Schein/Sultan/Quala received 6% excellent, 34% good, 50% fair and 11% poor for sizing/close fit to tooth surfaces and non-protruding hinge design. Patterson/Arcona trays were ranked as 0% excellent, 28% good, 28% fair and the remainder as poor (39%) for posterior vertical coverage, posterior reach coverage, distal dam depth, capillary vacuum seal, perforated tab to preclude displacement, non-protruding hinge design, clearly differentiated upper and lower trays and none (5%) for fill line demarcation. The Kerr trays received no excellent ratings, 16% good, 27% fair and 44% poor ratings in the anatomical fit, efficacy and patient comfort/acceptance criteria general categories as shown in Table 2. The remaining 11% for none were for natural interior occlusal anatomy, and fill line demarcation.

TABLE 1. Comparison of Fluoride Applicator Tray Brands — Single Arch Designs*

Tray Design	Oral-B	Butler	Schein Quala	Patterson Arcona
Anatomical Fit Criteria				
Natural Rounded Arch Shape	Excellent	Good	Poor	Good
Natural Interior Occlusal Anatomy	Excellent	None	Fair	Fair
Natural Overbite in Use	Excellent	Excellent	Fair	Fair
Efficacy Criteria				
Anterior Vertical Coverage	Excellent	Good	Poor	Fair
Posterior Vertical Coverage	Excellent	Fair	Good	Poor
Posterior Reach Coverage	Excellent	Good	Good	Poor
Distal Dam Depth	Excellent	Good	Good	Poor
Capillary Vacuum Seal	Excellent	Fair	Fair	Fair
Sizing / Close Fit to Tooth Surfaces	Excellent	Fair	Poor	Fair
Perforated Tab to Preclude Displacement	None	Poor	Poor	None
Patient Comfort/Acceptance Criteria				
Sturdiness/Stability	Excellent	Excellent	Poor	Good
Comfortable, Non-Sharp Edges	Excellent	Good	Good	Good
Ease of Use Criteria				
Fill Line Demarcation	Good	Poor	Poor	Poor
Clearly Differentiated Upper & Lower	Excellent	Excellent	Poor	Excellent
Tabs to Aid Placement/Removal	None	Good	Fair	None
Non-Flimsy Construction	Excellent	Excellent	Poor	Good

**based on comparative evaluation of large size trays*

TABLE 2. Comparison of Fluoride Applicator Tray Brands — Dual Arch Designs*

Tray Design	Oral-B	Butler	Schein Sultan Quala	Patterson Arcona	Kerr
Anatomical Fit Criteria					
Natural Rounded Arch Shape	Excellent	Good	Good	Good	Poor
Natural Interior Occlusal Anatomy	Excellent	None	Fair	Fair	None
Natural Overbite in Use	Excellent	Excellent	Fair	Fair	Poor
Efficacy Criteria					
Anterior Vertical Coverage	Excellent	Good	Fair	Fair	Fair
Posterior Vertical Coverage	Excellent	Fair	Fair	Poor	Poor
Posterior Reach Coverage	Excellent	Good	Fair	Poor	Good
Distal Dam Depth	Excellent	Good	Fair	Poor	Fair
Capillary Vacuum Seal	Excellent	Poor	Fair	Poor	Poor
Sizing / Close Fit to Tooth Surfaces	Excellent	Fair	Poor	Fair	Poor
Perforated Tab to Preclude Displacement	Good	Good	Fair	Poor	Poor
Patient Comfort/Acceptance Criteria					
Sturdiness/Stability	Excellent	Excellent	Good	Good	Fair
Non-Protruding Hinge Design	Excellent	Fair	Poor	Poor	Poor
Comfortable, Non-Sharp Edges	Excellent	Good	Good	Good	Poor
Visual Patient Acceptance	Excellent	Fair	Fair	Fair	Fair
Ease of Use Criteria					
Fill Line Demarcation	Good	None	Good	None	None
Clearly Differentiated Upper & Lower	Excellent	Good	Good	Poor	Fair
Tabs to Aid Placement/Removal	Excellent	Excellent	Excellent	Good	Good
Non-Flimsy Construction	Excellent	Excellent	Good	Good	Good

**based on comparative evaluation of large size tray*

DISCUSSION

The results clearly demonstrate that not all trays have equal designs. The most important rating category is that of efficacy. If the tray is not effective in delivering the drug to the tooth surfaces, then the procedure has not been successful and the patients have been charged for a service they did not receive. This could be perceived as unethical treatment of patients. Due to the limited literature on fluoride tray delivery systems, many practitioners take trays for granted and often assume that just any tray will do and the cheaper the better. Very little thought is given to the fact that a poorly fitting tray will not provide an adequate fluoride application. Dental hygienists are ethically responsible for delivering the best care possible for their clients. That includes the most effective delivery of professionally applied fluorides. This descriptive comparison of the fit of a variety of fluoride trays demonstrates which trays have the most desirable design features to assist clinicians in the selection of the most effective vehicle for the delivery of fluoride gels and foams for their patients. This in-vitro study uses an adult typodont depicting an average adult mouth and large sized trays in order to standardize the evaluation and provide a basis for direct comparison of trays manufactured as LARGE size. This study design would be difficult to replicate *in-vivo* as it would be impossible to standardize mouth size and anatomical variation. Furthermore, the presence of the buccinator muscles would prevent photographing the more distal portions of the tray thus limiting visibility and accuracy of assessment criteria for tray coverage and fit.

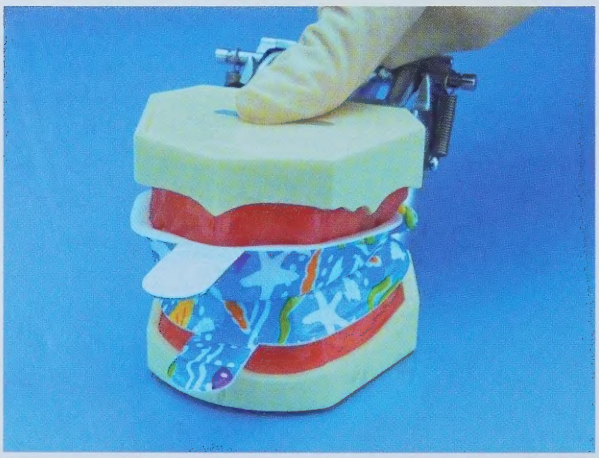


figure 3: Oral-B Dual Arch Funtray

figure 4: Butler Dual Arch Tray

ANATOMICAL FIT

Most of the trays had either an excellent or good natural rounded arch fit with the exception of the single arched Schein/Quala(SQ) as evidenced in Figure 1 and the dual arched Kerr trays shown in Figure 2. The Kerr design is more narrow and elongated and not in conformity with human arches. Only the Oral-B design features natural occlusal anatomy in the inner trough. This detail may help to force the topical fluoride into the caries prone pits and fissures as the patient bites down on the tray during application. The Butler and Kerr designs are completely devoid of occlusal detail whereas the remaining tray designs use radiating lines. However, these radial lines are of dubious effectiveness as compared with the Oral-B design containing "impression-like" occlusal surface anatomy. There were only two tray designs which incorporated a natural overbite use system. Both the Oral-B and Butler trays, when placed on the models, adapted to the natural overbite without displacing the tray and exposing the teeth. On the other models, total closure was very difficult and in all instances, portions of the tray were moved away from the teeth, preventing total tooth coverage.

EFFICACY

In the evaluation of the anterior vertical coverage, photographs demonstrate Oral-B dual arch Funtray's excellent adaptation of the tray to the model with complete vertical coverage from the anteriors through to the posteriors (Figure 3). Figure 4 features Butler's dual arch trays with good adaptation to the model. However, some teeth are only partially covered, therefore fluoride coverage is suspect. The SSQ dual arch design featured in Figure 5 shows a large amount of space existing between the anterior teeth and the top part of the tray. This lack of close adaptation could jeopardize topical fluoride coverage in this area. The Kerr Discovery Tray exhibits the poorest vertical coverage of the centrals, laterals and bicuspid teeth. (Figure 6). Efficacy of this tray would be extremely inhibited by this design.

The posterior vertical coverage of the dual arched Oral-B Funtray, Butler tray, the Patterson/Arcona and the Kerr Discovery Trays are demonstrated in Figures 7, 8, 9, and 10 respectively. The Oral-B Funtray design provides for excellent adaptation to the arch and complete vertical coverage

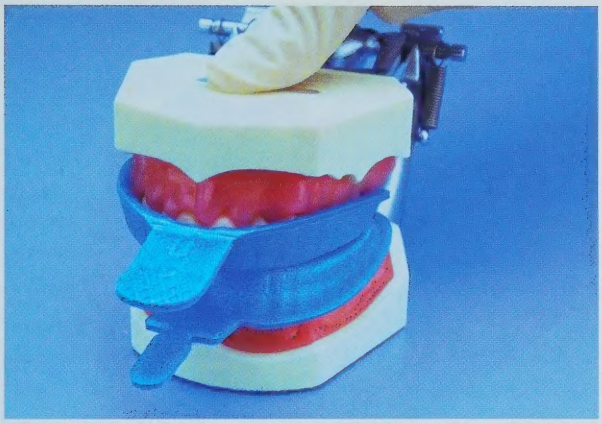


figure 5: Sultan/Schein/Quala Dual Arch Trays

figure 6: Kerr Discovery Tray

of all the teeth. Also noteworthy is the posterior hinge which does not protrude as far as some of the other designs (Figure 7). The Butler tray adapts fairly well to the arch, however, the vertical tooth coverage could be suspect in the posterior region (Figure 8). The Patterson/Arcona dual tray design has slightly better anterior vertical coverage than the SSQ, but is inferior to Oral-B and Butler designs. From a posterior perspective, the PA design fails to completely cover the posterior region. In addition to a severely protruding hinge which could cause gagging, the absence of a distal dam could result in a more serious repercussion in terms of the topical fluoride flowing out of the tray and being ingested (Figure 9). The Kerr Discovery trays quite obviously adapt poorly to the dental arch and provide inferior vertical tooth coverage (Figure 10).

figure 7: Oral-B Dual Arch Funtray

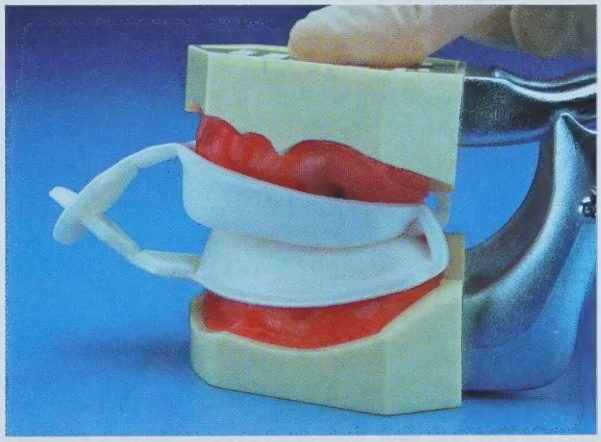


figure 8: Butler Dual Tray

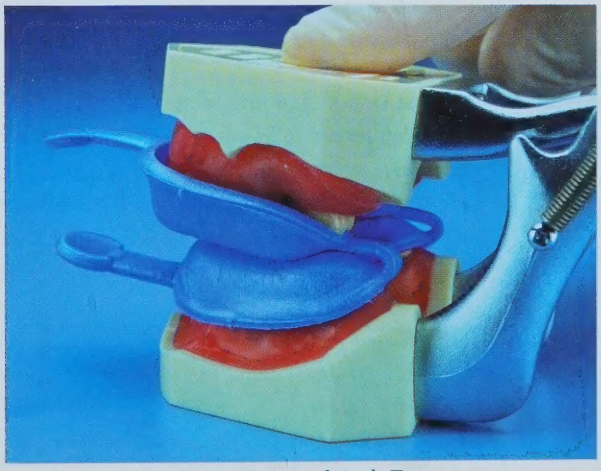


figure 9: Patterson/Arcona Dual Arch Tray

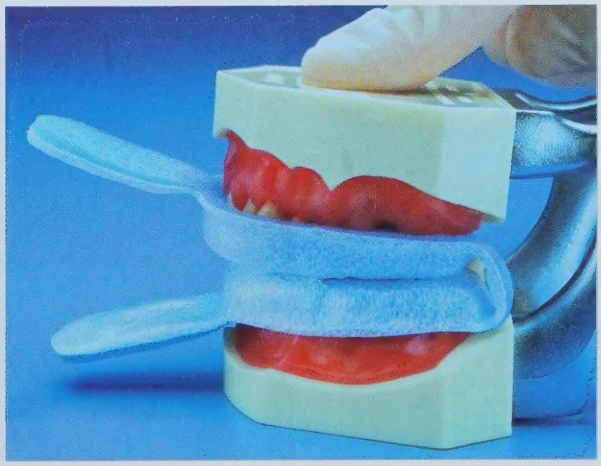


figure 10: Kerr Discovery Tray

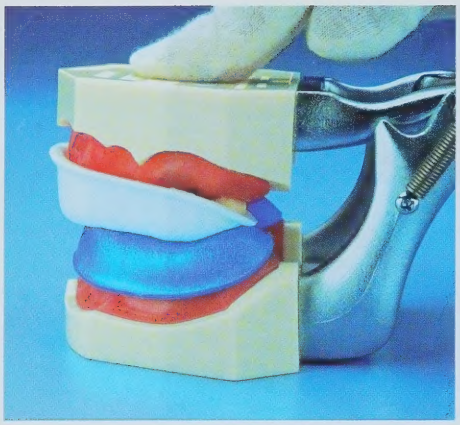


figure 11: Patterson/Arcona Single Arch Trays

The single arched Oral-B Centrays, like the dual arch Centwins were found to have both excellent anterior and posterior vertical coverage. The Butler single arch trays had good anterior vertical coverage but were a bit deficient in the posterior vertical coverage and thus were rated only as fair. The Patterson/Arcona single arched trays (Figure 11) although they appear to have satisfactory anterior vertical coverage, have poor coverage of the posterior second molar due to inadequate tray depth and arch length. Downward views of both the single arch Schein trays (Figure 12) and the single arch Quala trays (Figure 13) demonstrate large undesirable gaps between the outer tray perimeter and the anterior teeth from bicuspid to bicuspid. Because of this serious deficiency, the fluoride gel or foam will be prevented from reaching the anterior teeth resulting in substandard care.

Another design flaw that can affect close contact of topical fluoride on anterior teeth relates to tray designs having anterior tabs that are not perforated or scored. An example can be seen in Figure 14. Butler single arch trays feature unscored tabs that can cause the tray and fluoride topical to pull down and away from the teeth during use. Here, a finger is used to replicate what could be caused by the patient's lips during the application.

PATIENT COMFORT/ACCEPTANCE

Most of the designs, with the exception of the SQ single arch and the Kerr dual arch, were rated as either good or excellent in their sturdiness and stability. An illustration of the flimsy construction of the Schein single arch trays as compared to the Oral-B Centrays can readily be seen in Figure 15 which shows cross-sectional views of both trays at the anterior midpoint. The Oral-B Centrays (bottom) feature a desirable tapering of the tray trough to the palatal area. The foam thickness measurement in this area for the Centray was 1.2 mm while the Schein was only 0.7 mm. This flimsy design could easily be responsible for the escape of topical fluoride along with unnecessary ingestion. This same ultra thin design was present also in the Quala single arch tray.

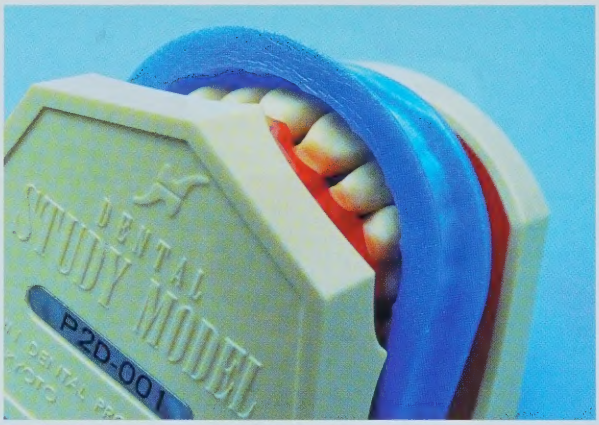


figure 12: Single Arch Schein Trays

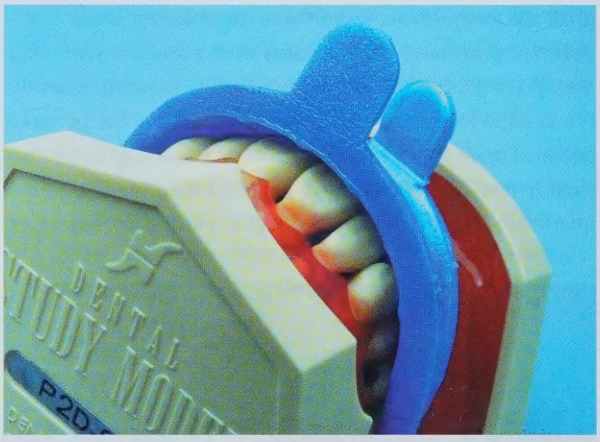


figure 13: Single Arch Quala Trays

Only the Oral-B dual design uses a hinge device that collapses and folds out of the way during use rather than protruding to trigger the gag reflex. The Kerr Discovery tray differs from the other brands in this study in that it alone uses a soft absorbent lining laminated on the inside of the trough (Figure 2). An undesirable result of this laminated design is that the harder outer shell edge is sharp on the oral mucosa, therefore lacking the comfort of the trays that use a flat border. The Oral-B tray has a contoured border molding which rests comfortably against the soft tissues with no risk of

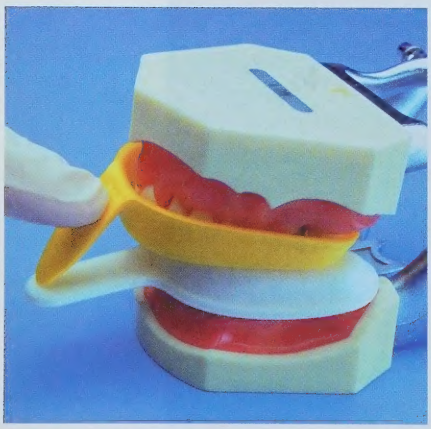


figure 14: Butler Single Arch Trays with Unscored Tabs

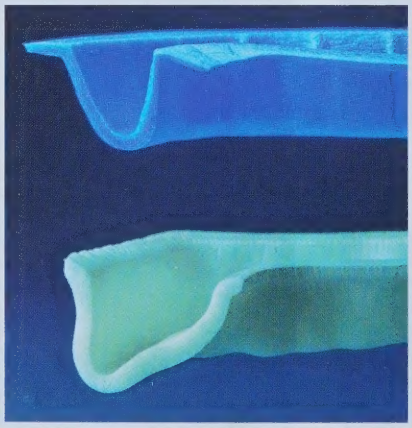


figure 15: Schein Single Arch Tray (top) Oral-B Centray (bottom)

impingement. In addition to patient comfort, this border molding serves the more important function of keeping the fluoride topical drug inside the tray to help prevent ingestion and salivary dilution. Another potential drawback of the Kerr laminated design relates to the fluoride topical becoming absorbed by the porous lining rather than being fully deposited on the tooth surfaces. In a study investigating fluoride retention and ingestion following topical fluoride applications, Eisen and LeCompte[5] discovered that use of an absorptive liner was less important than the viscosity of the fluoride gel in preventing ingestion. In fact, the authors reported the lowest amount of fluoride retention in unlined trays when a high viscosity gel was used. This finding suggests that the fluoride uptake by the teeth is more efficient in unlined trays as well as being safer with less risk of ingestion of retained fluoride present in the tray.

EASE OF USE

The only tray designs with good fill line demarcations were both single and dual Oral-B trays and the dual arch Schein/Sultan/Quala trays. This is an important safety feature for reminding clinicians not to overfill their trays thus minimizing the chance of ingestion. All of the tray designs studied, with the exception of the single arch SQ and the Kerr dual arch, had clearly defined upper and lower arches for ease of identification. All of the dual arch trays had excellent tabs for placement and removal of the trays, however, the Oral-B, PA, and the Schein single arch trays were devoid of tabs. Construction wise, all trays compared relatively well, however, the SQ single design was quite flimsy in comparison with the other designs.

COMPARISON OF ARCH FIT AND FLUORIDE COVERAGE POTENTIAL

The closeness of the tray adaptation to the natural contours of the dental arch can be critical in terms of fluoride coverage. In particular, when exposed root surfaces are present in cases of severe recession, the tray must be able to reach these exposed surfaces for maximum fluoride benefit. Professional application of topical fluorides has been shown to reduce the

figure 16: Butler Single Arch Trays

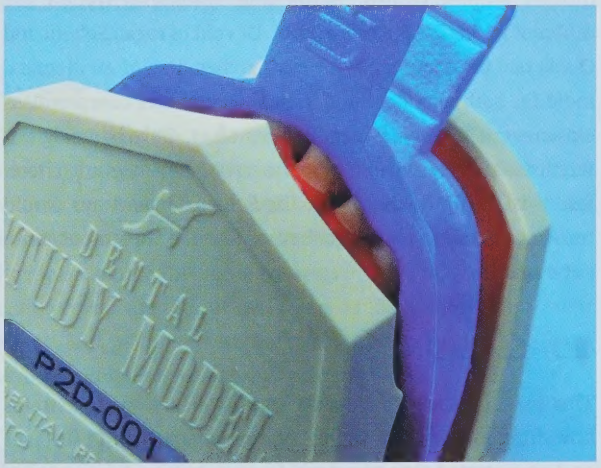


figure 17: Oral-B Centwins

figure 18: Butler Single Arch Trays with Foam Applied to Periodontal Model

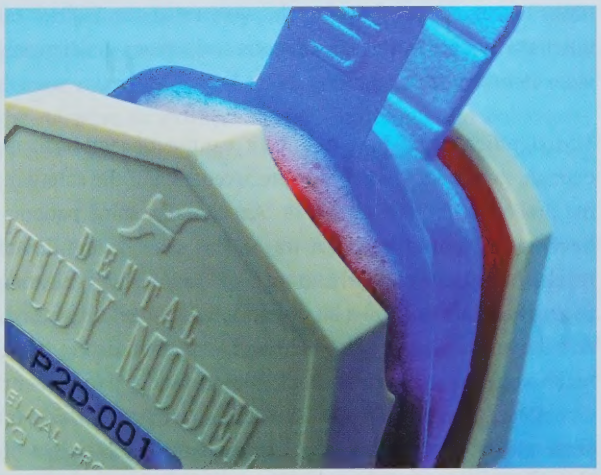


figure 19: Oral-B Centwins with Foam Applied to Periodontal Model

incidence of root caries in numerous short and long-term studies.[12,13,14,15,16] However, satisfactory results will be achieved only if the applicator tray is designed to accommodate these very susceptible caries prone areas. Figures 16 &17 demonstrate the difference between the Butler single arch trays and Oral-B Centwins. These photos were taken on the periodontal model typodont (Nissin P2D-001). A space exists from the root surface to the tray perimeter on both sets of trays, however, the Butler gap is 6 mm while the gap on the Oral-B design is only 3mm. In Figures 18 & 19 a fluoride foam has been added to both the Butler single arch trays and the Oral-B Centwins on the periodontal model. The superior fit of the Oral-B design results in thorough coverage of the critical exposed root surfaces, whereas the excessive space provided by the Butler design results in root surfaces not being adequately covered with foam. This dramatically shows the need for a close-fitting tray that begins with adequate tray depth and a naturally rounded arch.

An additional important difference between some of the trays relates to the designs used for the maxillary and mandibular arches. Oral-B, Butler and Patterson/Arcona use different molds for the two arches. Devoid of logic, Schein and Quala use the same mold for both arches. Use of an identical mold for both maxillary and mandibular arches compromises closeness of fit as well as patient comfort. Only by using different mold designs can a proper overbite be achieved. Therefore it is highly doubtful that the Schein/Quala trays would be as comfortable for the patient or provide the proper tooth coverage.

CONCLUSION

This visual survey of fluoride tray fit clearly demonstrates how differently various brands of trays adapt to tooth surfaces as demonstrated on a typodont. Further *in vivo* studies would be desirable to substantiate these in vitro findings. The Oral-B trays, both single and dual arch, were rated the highest in the majority of categories. Numerous and serious deficiencies were identified in most of the other brand designs.

The significance of proper tray fit cannot be emphasized enough, particularly when the effectiveness and the safety of the procedure rely on a good fit. Anecdotally, some patients have been reported to resist trays. This may be the direct result of the usage of poorly fitting trays and/or thick gels that can make treatment feel a bit claustrophobic. Well fitted trays and the availability of new, light and airy great tasting foam technology may alleviate this problem adding to patient compliance and satisfaction. In today's fast paced world of shortcuts and cost-savings, professionals often loose sight of how important quality can be in their everyday practices. The delivery of patient care should never be compromised. As health care professionals, dental hygienists are required to provide their clients/patients with the best services available and to base all practice decisions on clinically sound evidence.

REFERENCES

1. Ripa, L.W.: Review of the anticaries effectiveness of professionally applied and self applied topical fluoride gels. *Journal of Public Health Dentistry* 49(5):297-308, 1989
2. Fluorides: Current Information for Dental Personnel, CDA, 1992.
3. Pimlott,J.F.L.: Professionally applied topical fluorides: Providing optimal patient care using an evidence-based approach. *Probe Scientific Journal* 33(6): 175-179, 1999
4. Mellberg, J.R.: Evaluation of topical fluoride preparations. *J Dental Research* 69:771-779, 1990
5. Eisen, J.J. & LeCompte, E.J.A : Comparison of oral fluoride retention following topical treatments with APF Gels of varying viscosities. *Pediatric Dent.* 7(3):175-179, 1985
6. Ripa, L.W.: An evaluation of the use of professional (operator applied) topical fluorides. *J Dent Res.* 69 (Spec. No:786-796);discussion 820-823. Review,1990
7. Wei, S.H., Chik, F.F.: Fluoride retention following topical fluoride foam and gel application. *Pediatric Dent.* 12(6):368-374, 1990
8. Ekstrand, J., Koch, G., Lindgren, L.E., Peterson, L.G.: Pharmacokinetics of fluoride gels in children and adults. *Caries Res.* 15:212-220, 1981
9. McCall, D.R., Watkins, T.R., Stephen, K.W., Collins, W.J.N., Smalls, M.J.: Fluoride ingestion following APF gel application. *Br Dent J* 155:333-336, 1983.
10. Silverstone, L.M.: Preventive Dentistry, London/Fort Lee, Update Books, p.70, 1978.
11. Clinical Research Associates: Fluoride: Update Review. 14(5), 1990
12. Mellberg, J.R.,Sanchez, M.: Remineralization by a monofluorophosphate dentifrice softened by artificial caries. *J Dent Res* 65(7):959-962,1986
13. Mellberg, J.R., Sanchez, M.: An enamel sandwich method for studying the formation and remineralization of artificial carious lesions. *J Dent Res* (Spec Issue) 64:272,1985.
14. Stabholtz, A., et al: Demineralization and remineralization of in vitro fluoridated human root surfaces. *Clin Prevent Dent* 9(5):23-27, 1987.
15. Leske, G., et al: Clinical trial of the effect of daily NaF mouthrinsing on root caries. *J Dent Res* (spec issue) 67:171,1988.
16. Wallace, M.C., Retirf, D.H., Bradley, E.L.: Prevalence of root caries in a population of older adults. *Gerodontics* 4:84-89, 1988.

THE PRESERVATION OF THE NATURAL DENTITION: HOW SHOULD WE ADVISE OUR CLIENTS?

BY JOANNA ASADOORIAN, RDH, B.Sc.D. (Dental Hygiene)

KEY WORDS: natural dentition, outcomes of edentulousness, dentures, elderly population, tooth loss, evidence-based

ABSTRACT

Although the elderly population is retaining their natural dentitions much later in life, edentulousness is still a common state among seniors. The dental profession has a key role in promoting oral health, including tooth retention, and should utilize their expertise in advising their clients of the potential consequences of complete edentulousness. This review of the literature demonstrates specific unfavorable outcomes that a client may encounter including: poor adaptation to dentures, changes in the masticatory system, craniomandibular dysfunction, dietary changes, speech changes, aesthetic distortions, and self image problems. Specific unfavorable outcomes of edentulousness have been shown in the research, but it would be inappropriate for the oral health caregiver to make conclusions about general overall health and longevity of their clients based on the available data. Consultations between the oral health care provider and their clients regarding possible negative outcomes of edentulousness should be client-specific.

INTRODUCTION

The oral health professions strongly encourage clients to maintain their natural dentition for as long as possible, citing a number of negative consequences resulting from edentulousness. A strong claim has been made that edentulousness will have an effect on the clients' diet, speech, aesthetics, psyche, temporal mandibular joint (TMJ) muscles, overall health status and longevity.[1] While the intent is likely in the clients' best interest, many of the assertions presented by dental caregivers are anecdotal. The purpose of this paper is to identify the possible negative outcomes stemming directly or indirectly from complete edentulousness, as found in the published literature, in order to assist oral health caregivers in their consultations with their clients.

PREVALENCE OF EDENTULOUSNESS

Although the percentage of the adult population with total tooth loss has been declining steadily for the last several decades, it remains high among the elderly.[1,2,3] Studies show that a minimum of 40% of seniors over the age of 65 are totally edentulous.[1,2,4] The rate of edentulousness is higher for those elderly in institutionalized settings with proportions ranging from 50-70%.[5] Edentulousness is clearly a widespread concern for the elderly population.

SOCIO-ECONOMIC FACTORS

After the age of the individual, education and income are the most significant predictors of edentulousness.[1,6,7] Those individuals in lower income levels are 2.3 times more likely to be edentulous than their higher income counterparts.[1] Studies have also shown that those subjects falling into the lower education levels are almost two times as likely to be completely edentulous as those with higher education levels.[1] The state of edentulousness is a socio-economic issue.

NON-DISEASE RELATED FACTORS

Disease related factors such as caries, periodontal disease and trauma cannot sufficiently predict tooth loss.[4] Studies investigating the reasons for tooth extraction find that it is the non-disease related factors that are substantially associated with the decision to extract.[1] Social, attitudinal and behavioral factors have been found to have a significant impact on tooth loss.[4]

Edentulous individuals have been found to be less oriented in preventive health practices, including their oral health care.[4] Findings indicate they are more likely to have been smokers and they spend less time performing oral hygiene related tasks.[4] The edentulous maintain less positive attitudes towards dental care and dentists, and they place less value on their natural dentition, thus utilizing treatment oriented care rather than preventive care.[1,4]

MATERIALS AND METHODS

This paper provides a review of the literature examining the specific consequences of edentulousness. A MedLine search over the last 20 years was conducted to locate studies on edentulousness, denture use and, specifically, the outcomes of edentulousness. Additional information was obtained through reference articles. The search was limited to studies and review articles published in english that were locally held at the University of Toronto. Selection criteria included journal articles measuring the demographics of edentulousness, surveys conducted with edentulous individuals and original research examining specific outcomes of edentulousness.

SPECIFIC NEGATIVE OUTCOMES OF EDENTULOUSNESS

The possible negative outcomes of complete edentulousness include: functional and disease-related manifestations as a consequence of a poorly fitting prosthesis, changes in masticatory muscles and performance, TMJ dysfunction, dietary variations, temporary speech alterations, changes in appearance and psychological impacts (Table 1).

DENTURES

Although many clients adapt relatively well to complete dentures and they may be the only viable treatment option for some individuals, clients should understand that this form of prosthesis is not a substitute for their natural dentitions.[8] In addition to oral lesions and difficulties with adaptation to dentures, clients may encounter other denture related predicaments including problems with: pain, appearance, mastication, speech, retention, breakage, food accumulation, burning, tongue and cheek biting and clicking.[9,10] Those who do the most poorly with their prosthesis are the most underrepresented group because they are the individuals that have given up on their dentures and do not present themselves for treatment at the dental office.[11]

MASTICATORY MUSCLES AND CRANIOMANDIBULAR DYSFUNCTION

Changes in the masticatory system of the edentulous do occur beyond those seen in the dentate.[12] Measurement of masticatory muscles using computed tomography has accurately demonstrated greater loss of muscle tissue in the edentulous over the normal loss associated with aging in those with natural dentitions.[13] Weakness, due to loss of masticatory muscle and residual ridge resorption, contributes to decreased masticatory performance and craniomandibular dysfunction even after placement of complete dentures.[12-15] Individuals with weaker masticatory muscles associated with edentulousness have been shown to have more pain regions than dentate counterparts with stronger muscles.[14]

TABLE 1. Specific Negative Outcomes of Edentulousness

DENTURES
Oral lesions (11)
• denture Stomatitis
•angular Cheilitis
• hyperplastic Lesions
Poor Adaptation (9)
• anatomic factors
• physiologic factors
• psychological factors
MASTICATORY MUSCLES
Physiologic Factors
• decreased muscle density (13)
• decreased muscle size (14)
• decreased muscle area (12)
Symptoms
• muscle tenderness (17)
• muscle weakness (12,19)
Performance
• loss of masticatory force (19)
• loss of masticatory efficiency (21)
CRANIOMANDIBULAR DYSFUNCTION
TMJ manifestations
• osteoarthritis (17)
• TMJ remodeling (17)
• TMJ pain (14)
• sounds, deviations, and limited opening (14)
DIET
Dietary discrepancies (20,21)
• nutritional associations (20)
Difficulty chewing (20)
• altered food choices (11,19,20)
APPEARANCE
Decrease in canine prominence (22)
Decrease in lip fullness (22)
Sinking and hollowing of cheeks (22)
Increased mandibular prominence (22)
Loss of overall facial muscle tone (22)
Premature flaccid and wrinkled appearance (22)
PSYCHOLOGICAL IMPACT
Anxiety (9)
Depression, impaired concentration and Social withdrawal (9)
Decline in self image (9)
Maladaptive prosthetic responses (9,23)
SPEECH
altered speech characteristics (temporary) (24)

Although studies have demonstrated greater TMJ dysfunction in edentulous cohorts, this has not been a consistent finding.[15-18] Variations in study designs and the multitude of symptoms measured may have contributed to the incongruous results.

DIET AND NUTRITION

Significant inconsistencies exist between the diets of the edentulous and the dentate. The common assertion that alterations in food choices in the diet of the edentulous due to a difficulty in chewing has been substantiated in the literature.[11,19,20] Almost half of all denture wearers consume a smaller variety of foods and report that they have difficulty chewing some foods.[20] Two studies have also demonstrated that dentate subjects had superior diets with regard to lower fat and cholesterol intake and higher vitamin, mineral and fiber intake.[20,21] These nutritional discrepancies could result in greater disease risk, but edentulousness is not necessarily a causative factor and may simply be associated with certain lifestyle behaviors and socioeconomic status.[20,21]

AESTHETICS

The aesthetic implications of edentulism should not be depreciated, and this inevitable outcome may have a bearing on an individual's self perception.[9] Loss of teeth and the supporting bony structures result in a lack of fullness of facial muscle and skin tone.[22] Although the degree of physical distortion varies between individuals and can be somewhat masked by fitting the client with complete dentures, the client should be made aware of physical changes subsequent to edentulousness.[22] Oral health caregivers must ensure the client possesses adequate information in this regard.

PSYCHOLOGICAL IMPACT

Teeth are a visible and emotionally endowed body part.[9] Their loss can challenge one's sense of wholeness and in turn self esteem.[9,22] Anxiety, in response to a perceived threat to the alteration of one's body completeness, and depression, as a response to an actual loss, are both possible psychological manifestations of edentulousness.[9] Maladaptive responses to tooth loss and subsequent prosthetic replacement may have a psychological basis and explanation.[9]

However, a study has shown that over half of the edentulous people surveyed fully expected to lose all of their teeth and were not upset by this eventuality.[25] Based on the available literature, the dental professional would be unable to predict which of their clients would suffer from negative responses and how incapacitating such responses would be.[9,23]

SPEECH

Due to prosthetic restoration or complete edentulousness, speech characteristics may be temporarily altered.[24] Almost all individuals feel their speech returns to normal within three years with the use of a prosthesis, and this perception was confirmed by listeners.[24]

CONCLUSIONS

Substantial evidence exists to support the dental profession's emphasis on the maintenance of their clients' teeth. Dentures may alleviate some problems that clients experience with the loss of their natural dentition, but the oral health caregiver has the responsibility of informing their clients that many negative manifestations are possible outcomes of edentulousness and denture use or disuse. Specific, negative outcomes resulting from edentulousness have been demonstrated in the literature.

Following an onerous dental predicament, a client may have satisfactory results with full dental clearance and subsequent prosthesis thus resulting in an improved quality of oral well being. Some of the negative outcomes of edentulousness can be corrected and/or managed with proper treatment and education. Continuous care of the edentulous client must be encouraged in order to facilitate the most positive oral health outcomes possible.

Dental professionals should inform their prospective edentulous clients about the possible specific outcomes resulting from the loss of the natural dentition, and would be remiss to not do so. However, the oral healthcare provider must be careful not to declare anecdotes regarding general negative impacts on overall health and disease, quality of life and longevity as absolute outcomes of edentulousness. Future research will likely examine these broad health outcome issues. After consultation with their oral healthcare provider, the client should be equipped with the necessary evidence-based information regarding the possible specific outcomes of edentulousness. Ultimately, it is the client that must weigh the information provided and determine how it will impact her/his health status overall.

REFERENCES

1. Marcus, S. E., Kaste, L.M., Jackson Brown, L.: Prevalence and demographic correlates of tooth loss among the elderly in the United States. *Spec care dent* 14(3): pp. 123-126, 1994
2. Galan, D., Brecx, M. and Heath, M.R.: Oral health status of community-dwelling older Canadians. *Gerontology* 12(1): pp. 41-48, 1995

3. Marcus, S.E., Drury, T.F., Brown, L.J. and Zion, G.R.: Tooth Retention and Tooth Loss in the Permanent Dentition of Adults:United States, 1988-1991. *J Dent Res* 75(Spec Iss): pp. 684-695, 1996

4. Gilbert, G.H., Duncan, R.P., Crandall, L.A., Heft, M.W. and Ringelberg, M.L.: Attitudinal and behavioral characteristics of older Floridians with tooth loss. *Community Dent Oral Epidemiol* 21: pp. 384-389, 1993

5. Hamasha, A.A., Hand, J.S. and Levy, S.M.: Medical conditions associated with missing teeth and edentulism in the institutionalized elderly. *Spec Care Dent* 18(3): pp. 123-127, 1998

6. Fischer, H.C., Funk, G.F., Karnell, L.H. and Arcuri, M.R.: Associations between selected demographic parameters and dental status: Potential implications for orodental rehabilitation. *J Pros Dent* 79(5): pp. 526-531, 1998

7. Thompson, G.W. and Kreisel, P.S.J.: The impact of the demographics of aging and the edentulous condition on dental care services. *J Pros Dent* 79(1): pp. 56-59, 1998

8. Jacob, R.F.: The traditional therapeutic paradigm: Complete denture therapy. *J Pros Dent* 79(1): pp. 6-13, 1997

9. Friedman, N., Landesman, H.M. and Wexler, M.: The influences of fear, anxiety, and depression on the patient's adaptive responses to complete dentures. Part I. *J Pros Dent* 58(6): pp. 687-689, 1987

10. Kotkin, H., Slabbert, J.C.G., Becker, P.J. and Carr, L.: Perceptions of Complete Dentures by Prospective Implant Patients. *Int J Prostho* 11(3): pp. 240-245, 1998

11. Strauss, R.P. and Hunt, R.J.: Understanding the value of teeth to older adults: Influences on the quality of life. *JADA* 124(Jan): pp. 105-110, 1993

12. Newton, J.P., Yemm, R., Abel, R.W. and Menhinick, S.: Changes in human jaw muscles with age and dental state. *Gerontology* 10(1): pp. 16-22, 1993

13. Raustia, V.M., Salonen, M.A.M. and Pyhtinen, J.: Evaluation of masticatory muscles of edentulous patients by computed tomography and electromyography. *J Oral Rehab* 23: pp. 11-16, 1996

14. Klemetti, E. and Heikela, E.: Craniomandibular Disorders, Edentulousness and the Clinically Estimated Size of the Masseter Muscle. *J Craniomandibular Prac* 13(3): pp. 173-176, 1995

15. Klemetti, E.: Signs of Temporomandibular Dysfunction Related to Edentulousness and Complete Dentures: An Anamnestic Study. *J Craniomanibular Prac* 14(2): pp. 154-158, 1996

16. Gray, R.J.M., McCord, J.F., Murtaza, G. and Siddique, M.: The Incidence of Temporomandibular Disorder Signs in Patients wearing Complete Dentures compared to Patients with a Natural Dentition. *Eur J Prosthodont Rest Dent* 5(3): pp. 99-103, 1997

17. MacEntee, M.I.: The prevalence of edentulism and diseases related to dentures—a literature review. *J Oral Rehab* 12: pp. 195-207, 1985

18. Sakurai, K., San Giacomo, T., Arbree, N.S. and Yurkstas, A.A.: A survey of temporomandibular joint dysfunction in completely edentulous patients. *J Pros Dent* 59(1): pp. 81-85, 1998

19. Slagter, A.P., Lambertus, W., Olthoff, W., Bosman, F. and Steen, W.H.A.: Masticatory ability, denture quality, and oral conditions in edentulous subjects. *J Pros Dent* 68(2): pp. 299-307, 1992

20. Greksa, L.P., Parraga, I.M. and Clark, C.A.: The dietary adequacy of edentulous older adults. *J Pros Dent* 73(2): pp. 142-145, 1995

21. Joshipura, K.J., Willett, W.C. and Douglass, C.W.: The impact of edentulousness on food and nutrient intake. *JADA* 127(Apr): pp. 459-467, 1996

22. D'Augustine, R., Blitz, A.N. and Wechsler, S.M.: Psychological Problems of the Edentulous Patient. *Clin Prev Dent* 2(2): pp. 9-11, 1980

23. Friedman, N., Landesman, H.M. and Wexler, M.: The influences of fear, anxiety, and depression on the patient's adaptive responses to complete dentures. Part II. *J Pros Dent* 59(1): pp. 45-48, 1988

24. Foti, B., Tavitian, P. and Bonfil, J.J.: Speech intelligibility in patients with complete dentures according to the material used. *J Oral Rehab* 25: pp. 479-484, 1998

25. Nuttall, N.M. and Nugent, Z.J.: Indicators of dental extractions and full mouth clearances: a longitudinal analysis. *Community Dent Oral Epidemiol* 25: pp. 181-183, 1997

Perio REPORTS

Bimonthly publication designed for dentists and dental hygienists concerned about their patient's periodontal health. Each issue summarizes periodontal research of specific interest to clinicians. Easy to read format keeps you up to date on the latest research findings.

Journals reviewed for **Perio REPORTS** include:
Journal of Periodontology
Journal of Clinical Periodontology
Journal of Periodontal Research
Journal of Dental Research
Periodontal Abstracts
Quintessence International
JADA, JADHA

☐ Please send sample issue for my review

☐ $48 one-year ☐ $84 two-year

Name_____
Address_____
City _____Prov._____Postal Code_____

Mail to:
Perio REPORTS, P.O. Box 52090
311 - 16th Ave. NE, Calgary, Alberta T2E 8K9

ANNUAL INDEX VOLUME 34: *PROBE* AND *PROBE SCIENTIFIC JOURNAL*

PROBE JOURNAL:
N° 1 JAN/FEB 2000 pps 1-40
N° 2 MAR/APR 2000 pps 41-80
N° 4 JUL/AUG 2000 pps 121-160
N° 5 SEP/OCT 2000 pps 161-200

PROBE SCIENTIFIC JOURNAL:
N° 3 MAY/JUN 2000 pps 81-120
N° 6 NOV/DEC 2000 pps 201-232

SUBJECT INDEX

ABSTRACTS

30-33, 68-71, 105-115, 145-149, 190-191

ANNUAL INDEX

229-230

BOOK REVIEW

Proceedings of the European Workshop on Mechanical Plaque Control, 59

CANADIAN DENTAL HYGIENISTS ASSOCIATION

News, 6-13, 46-47, 126-127, 168-170

News (Explorer, number 1), 2, 7; (Explorer, number 2), 2-5

36th Annual Meeting of the CDHA Board of Directors, 6

CDHA — Working for You!, 6

CDHA Website Recognized by Healthlinks, 7

CDHA Life Membership Recipient for 1999 — Fran Richardson, 7

CDHA Distinguished Service Award Recipient for 1999 — Dale Scanlan, 8

CDHA Dental Hygiene Research Grant Recipient, 47

CDHA Summary of the Second Report on the Health of Canadians — "Toward a Healthy Future", 49

CDHA/Colgate Community Health Award, 169

CDHA/Oral-B Graduate Student Research Award, 170

CDHA/Oral-B Dental Hygiene Research Grant, 170

EDITORIALS

Goulding, M., 83

MacDonald, L., 203

Richardson, F., 167

EDUCATION

Creating Practitioners for the New Century, 58

Dental Hygienists to have B.Sc. Program at University of Alberta (Explorer, number 1), 2

INFORMATION

Canada Hosts Global Conference on Ageing, 35

National Dental Hygiene Week, 72

Breakthrough Quit-Smoking Program Launched by the Canadian Cancer Society, 74

A Healthy Diet for People with Diabetes, 74

Position Statement of the Canadian Dental Association — March 2000

Assessment for Considerations Regarding Fluoride Supplementation, 150

Dental Waterlines — The Straight Facts — an Online Web-based Course, 150

Information Web Directory Gives Quick Access to Support Services to Canada's Two Million Caregivers, 151

Herbs — Everyday Reference for Health Professionals, 151

Trigeminal Neuralgia in Dentistry, 152

New BC Study Finds Home Care More Cost Effective to Government than Residential Care, 152

Photodynamic Therapy — Using Light to Kill Tumours, 153

Member Communication with CDHA, 188

UBC Dental Hygiene Update — Part-Time Distance Education for Dental Hygiene in Canada, 189

INTERNATIONAL DENTAL HYGIENE

Smiles from the Dominican Republic, 171

Dental Volunteers for Israel (DVI), 172

Guatemala: Blood, Sweat, and Tears, 173

An Update From Hungary, 177

Reaching Out... Dental Hygiene Efforts in Bolivia, 178

Dental Health Project in South Lebanon, 182

Benefits and Effect of a Six-Year School-Based Fluoride Mouth Rinse Program, 183

INTERNET

Probing the Net, 76, 156, (Explorer, number 2), 10

LETTER TO THE EDITOR

188

NEW PRODUCTS

DentalMan™ International, 33

3M Introduces 3M™ Professional Tooth Whitening System, 34

Sonicare Introduces World's First Sonic Toothbrush, 34

Braun Oral-B Double Plaque Fighting Capability, 77

Pfizer Canada Launches an Educational Health Centre on the Internet for the Public and Health Care Professionals, 142

Trident Launches First Gum to Whiten Teeth and Fight Cavities, 142

Presence — A Healthview Euro RSCG Company, 144

Debacterol Stops Canker Sores in 5 Seconds Flat — With a One-Time Treatment, 144

Mouth Kote — Long-Lasting Oral Moisturizer with Natural Yerba Santa, 193

ORAL HEALTH

Mechanical and Antimicrobial Therapy: Roles in the Treatment of Periodontal Disease, 65

Mise à jour sur les dentifrices, 136

Periodontal Disease and Low Birthweight: Critical Link (Explorer, number 1), 3

POPULATION HEALTH

Developing and Providing an Infant Tooth Decay Program for a First Nations Community, 14

The First Nations and Inuit Regional Health Survey National Report 1999, 25

PRESIDENT'S MESSAGE

McKeown, L., 3, 43, 123, 163; (Explorer, number 1), 1

Lavigne, S., (Explorer, number 2), 1

PROFESSIONAL DEVELOPMENT

CDHA's 11th Annual Professional Conference, 19-24, 60-64, 194-196

Empowerment: A Strategic and Facilitative Tool for the Dental Hygienist, 129

Development of the National Hygiene Certification Examination (NDHCE), 132

PROVINCIAL DENTAL HYGIENE

Vancouver Endodontist, Dr. John Diggens, New President of the CDA, 9

Dental Hygiene — Coast to Coast, 9

BC Dental Hygiene Practice and Entrepreneurship Symposium, 11

National Dental Hygiene Week™ ODHA Report — 1999 NDHW Activities, 12

SCIENTIFIC

Analysis of the Hydroxyapatite Root Substitute Surface Post Ultrasonic Scaling, 87

The Professional Status of Dental Hygiene in Canada Part Two: Challenges, Insights and Advancement, 99

The Preservation of the Natural Dentition: How Should We Advise Our Clients?, 207

Not All Trays Are Created Equal: An Analysis of Fluoride Tray Fit, 216

Continuing Education and Changes in Practice: A Survey of Dental Hygiene Study Club Participants, 213

AUTHOR INDEX

Arbes Jr, S., Slade, G., and **Beck, J.:** NHANES III Data Lend Further Support to Connection Between Periodontal Disease and Heart Attack (*Abstracts*), 191

Arlin, Dr. M.: Mechanical and Antimicrobial Therapy: Roles in the Treatment of Periodontal Disease (*Feature Report*), 65

Asadoorian, J.: The Preservation of the Natural Dentition: How Should We Advise Our Clients? (*Scientific Journal*), 207

Barr Overholt, C.: Use of a Biodegradable Chlorhexidine Chip in the Treatment of Adult Periodontitis: Clinical and Radiographic Findings (*Abstract*), 145

Berstein, ML.: Chronic Nonspecific Mucosal Lesions Tricky to Diagnose and Treat (*Abstracts*), 147

Choufani, A., Doughan, B., Doumit, M., and **Timgren, B.:** Benefits and Effect of a Six-Year School-Based Fluoride Mouth Rinse Program (*International Reports*), 183

Ciancio, SG.: Periodontics: Controlled-Release, Local-Delivery Drugs for Periodontitis (*Abstracts*), 70

Clovis, J.: The Professional Status of Dental Hygiene in Canada, Part Two: Challenges, Insights and Advancement (*Scientific Journal*), 99

Covington, P. and **Noble, P.:** Creating Practitioners for the New Century (*Education*), 58

Eskow R.N., and **Gillcrist, J.A.:** Occupational Risk Update on Hepatitis Viruses A, B, C, D, E, and G (*Abstracts*), 68

Goulding, M.: Dental Hygiene Research in Canada, 83 (Editorial); Analysis of the Hydroxyapatite Root Substitute Surface Post Ultrasonic Scaling (*Scientific Journal*), 87

Hoffman, D.: Partnerships in Health - Broaden Your Professional Horizon (*Highlights from the 11th Annual CDHA Professional Conference 2000*), 194

Iverson, S., and **Pernisie, H.:** National Dental Hygiene Week™ (*Information*), 72

Jared, H., Lieff, S., Wilder, R., and **Offenbacher, S.:** Periodontal Disease and Low Birthweight: A Critical Link? (*Scientific Journal/Explorer*), 3

Jennings, S.: Dental Volunteers for Israel (DVI) (*International Report*), 172

Juhasz, M.: An Update From Hungary (*International Report*), 177

Kittle, D.: Guatemala: Blood, Sweat, and Tears (*International Report*), 173

Landry, D.: Development of the National Dental Hygiene Certification Examination (NDHCE) (*Feature Article*), 132

Lavigne, S.: Not All Trays Are Created Equal: An Analysis of Fluoride Tray Fit (*Scientific Journal*), 216; An Invitation to Professionalization (Explorer, number 2), 1

Lussi, A.: Avoid Brushing Immediately After Exposure to Erosive Food/Beverage (*Abstracts*), 190

MacDonald, L.: From Bricks to Building...Dental Hygiene Science (*Editorial*), 203

McKeown L.: Are We Communicating With Our Clients?, 3; What's the Mouth Got To Do With It?, 43; Risk Management, 123; Dialogue Between Outgoing and Incoming Presidents (*President's Messages*), 163; "O! This Learning — What a Thing It Is" (*Explorer, number 1*), 1;

Milosevic A.: Managing Patients with Eating Disorders and Preventing Damage to the Dentition (*Abstracts*), 30

Pelissero, U.: The Proceedings of the European Workshop on Mechanical Plaque Control (*Book Review*), 59

Pernisie, H., and **Pshebnicki, T.:** Reaching Out...Dental Hygiene Efforts in Bolivia (*International Report*), 178

Rhodus, NL.: Clinical Practice Guidelines for Sjögren's Syndrome (*Abstracts*), 149

Richardson, F.: Speaking of Honour! (*Guest Editorial*), 167

Saunderson, S.: Developing and Providing an Infant Tooth Decay Program for a First Nations Community (*Feature Report*), 14

Sawarna, K.: Smiles from the Dominican Republic (*International Report*), 171

Scannapieco, FA.: Oral Medicine: How Oral Bacteria May Affect the Lungs (*Abstracts*), 70

Sciubba, JJ.: OralCDx Analysis of Brush Biopsy can Detect Oral Cancer Early, Indicate Need for Scalpel Biopsy (*Abstracts*), 148

Shearer, R., and **Davidhizar, R.:** Empowerment: A Strategic and Facilitative Tool for the Dental Hygienist (*Feature Article*), 129

Smith, V.S.: Preventive Maintenance of the Soft Tissues Around Implants (*Abstracts*), 32

Thibault, C.: Mise à jour sur les dentifrices (*Feature Article*), 136

Timgren, B.: Dental Health Project in South Lebanon (*International Report*), 182

Veselyak, N.T., and **Branson, B.G.:** Continuing Education and Changes in Practice: A Survey of Dental Hygiene Study Club Participants (*Scientific Journal*), 213

Wilson Jr, TG.: Incorporating Risk Assessment Into Periodontal Treatment Planning (*Abstracts*), 146

Winkler S., Garg, A., Mekayarajjananonth, R., Bakaeen, L., and **Khan, E.:** Impaired Sense of Taste and Smell in the Elderly (*Abstracts*), 190

Wolf, K.: *Probing the Net*, 76, 156, (Explorer, number 2), 10

Worch K.P.: Nonsurgical, Nonextraction Treatment of Rapidly Progressive Periodontitis (*Abstracts*), 31

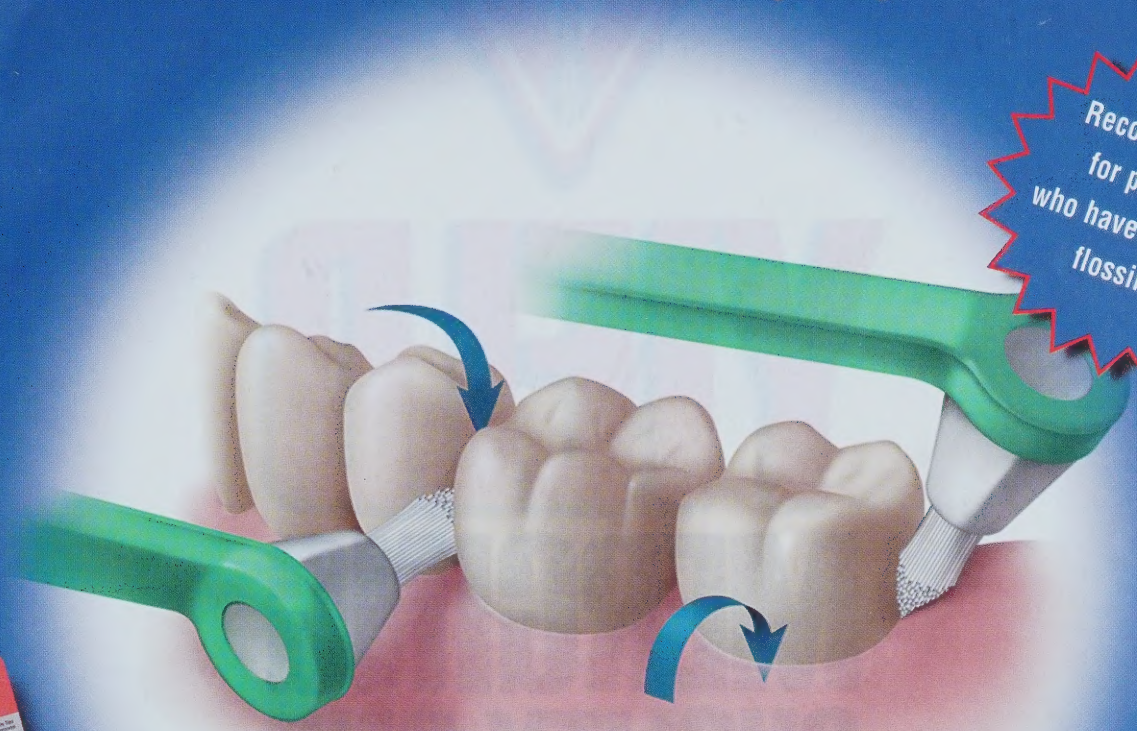
Sulcabrush® Inc.

Get a handle on healthy Gums™ !

NOW Available at:

WAL-MART®

WE SELL FOR LESS *every day!*



Recommended for patients who have difficulty flossing!

Photocopy this page, cut here | place this reply card in an envelope and mail to the address below

- Please send me **FREE COUPONS** to present to my patients to help them identify and purchase the ***Sulcabrush®*** at **WAL-MART**.

Free *Sulcabrush® travel* when your patients shop at **WAL-MART** (Details on coupon - Offer expires March 31/01)

DDS Name _____

RDH Name _____

Home ◄(Circle one only)► Dental Office

Address _____

City _____

Province _____ Postal Code _____ Tel: _____

1 800 387 8777

16 Brisbane Road, Downsview
Ontario, Canada M3J 2J8

YIELD

MERGING QUALITY AND SHARPNESS

When you're searching for the highest quality scalers, all signs lead to Hu-Friedy. Hu-Friedy scalers are the sharpest in the business, and they stay sharp longer. In fact, dental professionals use more Hu-Friedy scalers than all other brands combined. So take the high road, and follow the leader.

HU-FRIEDY DENTAL

To order, contact your dealer, or call 1-800-HU-FRIED

1965

7 DAYS

THIS BOOK MAY BE KEPT FOR
7 DAYS ONLY
IT CANNOT BE RENEWED

270A-3-71

SERIAL
RK
60
.5
C352
v.34